Mitigating Impact of National Systems of Innovation on the Severity of the Global Recession

Comparison of Selected Asian Economies

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Mitigating Impact of National Systems of Innovation on the Severity of the Global Recession: Comparison of Selected Asian Economies

Angathevar Baskaran* and Mammo Muchie**

Abstract

The research question we wish to investigate is the degree to which different Asian countries with differing levels of NSI strength and weakness cope in mitigating some of the adverse impacts of the recession. What we mean by mitigating capability is the ability of NSI to deal with and respond to unforeseen or foreseen crisis that could be induced internally or externally or by the combination of both domestic and internationals factors. In our previous research (Baskaran and Muchie, 2009), using descriptive comparative data, we examined how far the relative strength or weakness of NSI within the transition economies of the BRICS (Brazil, India, China, and South Africa – excluding Russia) is capable of mitigating the adverse impact of the recession. The early evidence emerging from these case countries suggested that the nature and degree of impact of the recession in these economies are different. We attempted to show that these differences are mainly due to the nature and distinct characteristics of the NSIs in these economies other things being equal. We would like to add new insights relating NSI to coping with the impact of current recession of the global economy through further research into selected Asian economies and comparing them.

For this, we employ a heuristic conceptual framework which presents a taxonomy of NSIs as: (i) developed/matured; (ii) transitional/learning; and (iii) nascent/weak; and also identifies 6 major sets of NSI components: (i) General investment climate and economic policy framework; (ii) Market, per capita income, and domestic savings; (iii) Industrial structure; (iv) Financial Institutions; (v) Foreign Trade; and (vi) Skills, R&D and Technology

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development. The degree of strength of these NSI components and interaction between them will make an NSI as either developed/matured, transitional/learning, and nascent/weak. The important issue we are highlighting here is that although there are many similarities between systems of innovation, there are also differences related to the stage of development, characteristics of NSI evolution, path dependency, institutions, laws, policies, and incentives. These in turn are likely to have either strong, relatively strong or weak mitigating impact on recession. We attempt to show this by selecting two case countries to represent each type of NSI in our conceptual framework and comparing these three sets of economies (in all, 6 countries). We are contributing by adding to the existing body of NSI literature by linking NSI framework to its potential mitigating impact on recession in national economies.

1. Introduction

The current global recession and financial crisis which was triggered in 2007 by the collapse of the sub-prime mortgage market in the United States (US) has affected almost every national economy in varying degrees. Most of the developed economies appear to have felt the immediate impact and the rest of the world felt the impact gradually. Some economies were more seriously affected by than the others. Some economies are witnessing some signs of recovery from the recession while others are still struggling to overcome the impact. Overall, the direct and indirect effects of the financial crisis in the Western developed economies on other regions were expected to be very significant. Multilateral organisations such as the UN identified that developing countries could be affected by lower demand for exports, reduced commodity prices, reduced capital inflows, delayed investments, and exchange rate volatility (United Nations 2009; AfDB et al, 2008, Economic Commission for Africa, 2008).

The likely nature and shape of impact of the recession in the advanced economies on the developing world and the emerging economies have attracted a lot of attention and the world multilateral institutions such the UN and IMF have come up with reports and individual experts have made some observations and statements. There seemed to be a consensus that among the developing and emerging economies some countries would be affected the most severely than others due to economy-specific factors and characteristics. For example, in the banking/ financial sector which triggered the credit crunch in the developed economies it was argued that the emerging economies such as BICS would not be affected to the extent of developed economies. Furthermore, it was also argued that the impact on even the banking/financial sectors among the BRICS economies would be different (Poshakwale, 2008).

This caught our attention and we came up with the argument that these differences are mainly due to the nature and distinct characteristics of the NSIs in these economies other things being equal. We carried out a study of BICS economies to examine how far the relative strength or weakness of the NSI within these economies is capable of mitigating the adverse impact of the recession. Our assumption that countries in transition are evolving strong NSI that can cope with recessionary downturn appears to be borne out by the available data and the six identified NSI characteristics, showing despite the problems, the economies are broadly on course to see this recession and through and come out stronger. What came out forcefully was how important it is to frame the challenge of the recession by using the NSI of a country.

Therefore, we propose to use the same approach to examine further how far the relative strength or weakness of the NSI within different Asian economies -- South Korea, Taiwan, Malaysia, Thailand, Bangladesh, and Nepal -- is capable of mitigating the adverse impact of the recession. For this, we would like to take only the NSI factor in trying to account how the nature and degree of impact of the recession across countries are likely to be different across selected case countries. We expect our research would advance new insights both to the significance and value of strengthening the NSI and how a potential to mitigate the severity of the global recession in emerging economies is associated with NSI development in given transition economies.

The paper is structured as following: section 2 presents a conceptual framework to link and analyse the NSI and its potential mitigating impact on global recession; section 3 to 8 presents individual cases (South Korea, Taiwan, Malaysia, Thailand, Bangladesh, and Nepal respectively), section 9 provides analysis of the cases and finally section 10 presents our conclusions and policy recommendations.

2. NSI and its Potential Mitigating Impact on Recession: A Conceptual Framework

A system of innovation, in general, brings together all the significant economic, social, political, organisational, institutional and other factors and their interactions and influence the development, diffusion, and application of innovations. Though interest in the innovation systems approach have grown since the 1980s, its origin dates back to the nineteenth century catch up aspirations of economies like that of Germany with Britain.

Although Friedrich List (1856) and his concept national production system may be seen as the historical origin of the national system of innovation (Freeman, 1995), according to Bengt-Åke Lundvall, the modern version of the concept appeared first in an unpublished contribution to OECD by Freeman (1982).

Since then, it has evolved over the years (e.g. Freeman, 1987, 1995; Lundvall, 1988, 1992, 2007; Nelson, 1993; and Edquist, 1997). Although NSI concept was used mainly in the context of developed economies, increasingly it began to be used to study developing countries (e.g. Cimoli, 2000); Intarakumnerd and Chaaminade, 2007). Also, there have been attempts to broaden NSI approach to study the problems and challenges of development and underdevelopment (e.g. Muchie *et al*., 2003). Thus, NSI provides the conceptual approach or framework for studying both developed and developing economies at various stages of development. We adopt NSI conceptual framework to investigate the degree to which different BRICS countries with differing levels of NSI strength and weakness cope in mitigating some of the adverse impacts of the recession. This is done by first identifying those elements of NSI which could have significant impact on the effectiveness of recession.

Lundvall (2007, p. 102) argued that NSI concept can be employed at two levels: (i) the 'core' - "*firms in interaction with other firms and with the knowledge infrastructure*" including universities; and (ii) 'wider setting' that includes "*national education systems, labour markets, financial markets, intellectual property rights, competition in product markets and welfare regimes*". In the 'wider setting' the government plays a major role in a number of ways. We would argue that in the narrow sense NSI involves a system of interaction of a wide variety of public and/ or private firms with other institutions such as universities, and government agencies -- all working together towards attaining the production and diffusion of knowledge and science, technology, and innovation within the boundaries of legally recognised states. The form of the interaction can take both technical and non-technical dimensions. It could be organisational, institutional, commercial, physical, human, mental, legal, social, and financial interactions. The broader goal of such interactions is the socio-economic development, regulation, and support for new science, technology, innovation within the country by dealing with and responding to both internal and external challenges. For this study, we employ the NSI concept in its wider setting.

The NSI has four key sets of elements: 1. The first set *Conceptual Framing* involves the ideas and policies that frame the overall scope or possible set of interactions of politics, economics and knowledge. The behaviour and interactions are often shaped by sets of common habits, norms, routines, established practices, rules, or laws. 2. The second set involves *Institutions, Technologies, and Knowledge and their co-evolution which enable* implementation of the conceptual framing and policies selected above (the first set) and to build an efficient innovation system. 3. The third set involves the means provided to the institutions (second set) for realising the goals set (first set), that is, various incentives such as financial and social rewards. This is vital to foster appropriate incentive system. If the incentive system is inappropriate or fails to command wider acceptance, the opportunity to organise robust NSI and achieve measureable results will be put in jeopardy. 4. The fourth set highlights the overall efficiency of the environment for learning in terms of implementation, monitoring, review, and feedback involving the above three sets. The learning outcomes can be different such as transformative, adaptive, corrective, modifying, evolutionary, and so on. This can also be negative. The relationship between these four sets of elements that constitute NSI are illustrated by Figure 1 (see the left hand side).

Figure 1: Four Major Sets of Elements of National System of Innovation (NSI)

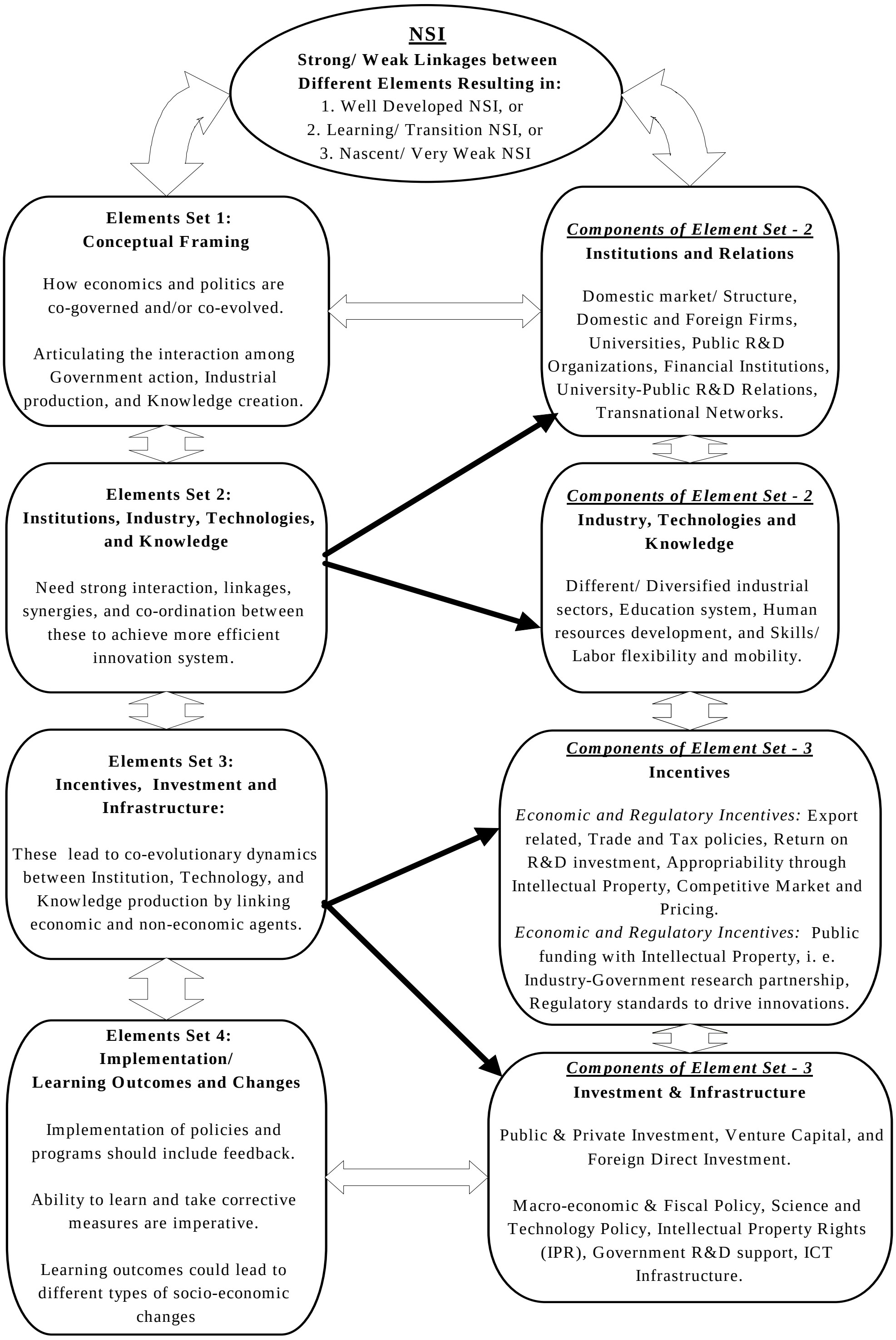
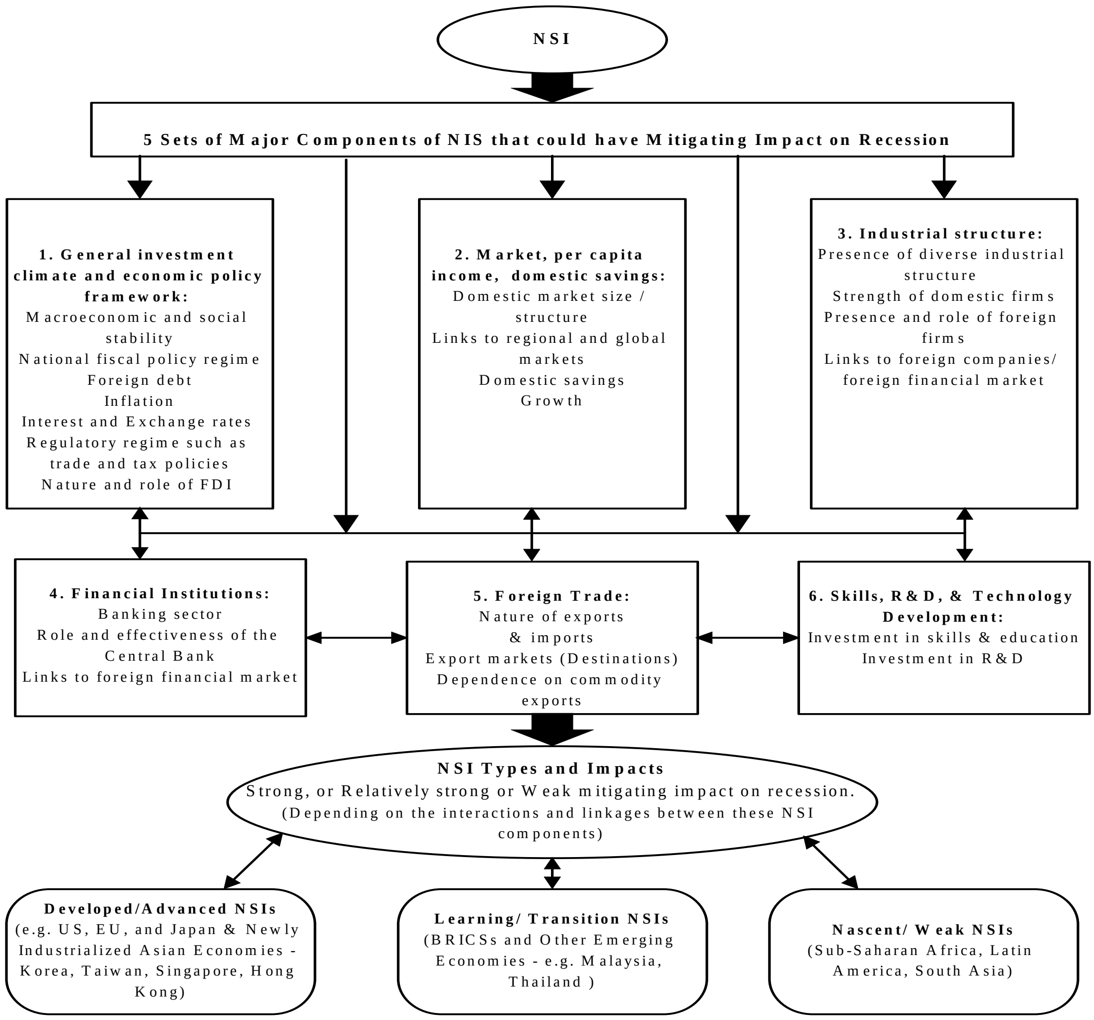


Table 1: Some Major Components of NSI that Could have Mitigating Impact on Recession	
Components of NSI that could Impact on Recession	*Related to the Elements of NSI (As shown in Figure 1)*
1. The general investment climate and economic policy framework: (a)Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate, and Exchange rate (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI	NSI Elements Set 1 (overall political and economic setting/ direction), and Set 3 and their components: Investment & Infrastructure, and Incentives
2. Market, per capita income, domestic savings: (a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings growth	NSI Elements Sets 2 and components: Institutions and Relations
3. Industrial structure: (a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market	NSI Elements Sets 2 and Set 3 and components: Institutions, Investment & Infrastructure, and Incentives
4. Financial Institutions: (a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market	NSI Elements Set 2 and components: Institutions, Industry Sectors, Technologies and Knowledge
5. Foreign Trade: (a) Nature of exports/ Imports (b) Export markets (Destinations) (c) Dependence on commodity exports	NSI Elements Set 2 and Set 3 and components: Industry, Technologies and Knowledge; and Incentives
6. Skills, R&D, and Technology development (a) Investment in education and skills (human resources) development (b) Investment in R&D	NSI Elements Set 2 and Set 3 and components: Industry, Technologies and Knowledge; and Incentives

Figure 2: Strength of National System of Innovation and its Mitigating Impact on Recession: A Conceptual Framework



In Figure 1 (see on right hand side), we elaborate Set 2 (Institutions, Industry, Technologies and Knowledge), and Set 3 (Incentives, Investment and Infrastructure) further into individual components or sub-elements, as these are relevant to making linkages and relations between NSI and recession. The strong presence and interaction and linkages between various institutions, industrial sectors, technologies, knowledge, incentives, investment, and infrastructure determine the higher or relatively stronger or weaker level of functioning of a particular NSI. We would argue that the relative strength of an NSI can have a mitigating impact on recession. We identified 6 sets of components (sub-elements) of NSI that could have significant mitigating impact on recession. These are shown in Table 1. These are part of 4 sets of major NSI elements that are illustrated in Figure 1. These NSI elements and components of these elements are largely derived from the *Word Investment Reports* published by the UNCTAD (e.g. 2002, 2003, 2004, 2005) and the NSI literature.

Figure 2 presents a conceptual framework linking 6 sets of NSI components or sub-elements (which are identified from the 4 major sets of NSI elements as shown in Figure 1) to the mitigating impact of NSI on recession. The degree of strength of these NSI components and interaction between them will make an NSI as either developed, transition/ learning, or nascent/ weaker. The important issue we are highlighting here is that although there are many similarities between systems of innovation, there are also differences related to the stage of development, characteristics of NSI evolution, path dependency, institutions, laws, policies, and incentives. These in turn are likely to have either strong, relatively strong or weak mitigating impact on recession. That is, if a country has a well functioning or strong 6 sets of NSI components identified in Table 1 and Figure 2, it is likely to witness high mitigating impact on recession. On the other hand, if a country has a non-functioning or weak 6 sets of NSI components, it is likely to witness no or little mitigating impact on recession. If a country has a relatively well functioning 6 sets of NSI components, then it is likely to have a relatively strong mitigating impact on recession.

What we mean by mitigating capability is the ability of NSI to deal with and respond to unforeseen or foreseen crisis that could be induced internally or externally or by the combination of both domestic and internationals factors. The tendency is towards restricting or contraction of the economy due to changes in business cycle or recessionary down turn in economic activity. Therefore the key to see mitigating capability is how NSI components respond and deal with this challenge. So, we correlate the NSI components to the recessionary downturn to explore whether they can cope or not. This is done by using indicative and descriptive data. For example, we take the GDP and see whether they have contracted or is it still growing, or reduced severely or slightly. We try to show through this the underlying economic strength or weakness or relative strength or weakness of the NSI to deal with the recessionary crisis.

We are contributing by adding to the existing body of NSI literature by linking NSI framework to its potential mitigating impact on recession in national economies. The way we did this theoretically is first to identify the four sets of elements that constitutes the NSI and then identify 6 sub-elements or components of NSI (as shown in Figure 1; and Table 1) and try to conceptualize whether and how weak or strong they can have mitigating impact on recession. In actual fact we are looking for making a paradigm change of the way economic development and recession can be appreciated by employing NSI framework.

To illustrate this empirically we analyse NSIs of selected Asian economies – South Korea, Taiwan, Malaysia, Thailand, Bangladesh and Nepal, using descriptive and secondary data. These countries were selected according to the classification of countries in *IMF-World Economic Outlook -2010*. South Korea and Taiwan are classified as 'Other advanced economies' and 'Newly industrialized Asian economies' sub groups under the major group 'Advanced Economies'. Malaysia is classified as 'Net Creditor' sub group, Thailand as 'Net debtor (official external financing)' sub group, and Bangladesh and Nepal are classified as 'Net debtor (experience with debt serving)' sub group, under the 'Emerging and Developing Economies' major group. In other words, IMF country classifications are used to select our cases to represent the types of NSIs illustrated in the conceptual framework. That is, South Korea and Taiwan represents developed NSI, Malaysia and Thailand are Transitional NSIs, and Bangladesh and Nepal represent weak or nascent NSIs.

In the following sections the potential mitigating impact of NSIs of these economies on recession will be analysed employing the conceptual framework illustrated by Figure 2.

3. The Case of South Korea

Korean economy fully open to trade and financial flows and the government is committed to reducing regulatory restrictions on business operations, increasing transparency in government – business relations and reducing corporate tax. But the organised labour is increasingly forceful in their demands in recent years.

Table 2 provides the main economic indicators for South Korea between 2000 and 2009. It is clear that the global recession has affected the real GDP growth and budget balance, increased the external debt, weakened its national currency against the US$, and particularly affected its exports and imports in 2008 and 2009.

In 2008 the shares of GDP by different sectors were: agriculture -3%, industry - 39.4%, and services: 57.6% (estimates). In 2007, the agriculture employed 7.2% of the workforce, the industry - 25.1%, and the services - 67.7% (estimates). South Koreas exports in 2008 and 2009 amounted to US$433.5b and $355.1b (estimate), respectively. The exports included: semiconductors, wireless telecommunications equipment, motor vehicles, computers, steel, ships, and petrochemicals. In 2008, the shares of its export partners were: China 21.5%, US 10.9%, Japan 6.6%, Hong Kong 4.6% (2008). South Koreas imports in 2008 and 2009 amounted to US$427.4b and $313.4b (estimate), respectively. The imports included: machinery, electronics and electronic equipment, oil, steel, transport equipment, organic chemicals, and plastics. In 2008, shares of its import partners were: China 17.7%, Japan 14%, US 8.9%, Saudi Arabia 7.8%, UAE 4.4%, Australia 4.1% (2008) (CIA, 2009).

Table 2: South Korea: Main Economic Indicators										
Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009***$^{+}$
Real GDP Growth Rates (%)	8.5	3.8	7.0	3.1	4.7	4.2	5.1	5.0	2.2	-1.8
Gross Domestic Savings Rates (% of GDP)	33.9	31.9	31.4	33.0	35.0	33.2	31.5	30.8	30.7	28.8
Gross Domestic Investment Rates (% of GDP)	31.0	29.3	29.1	30.0	30.4	30.1	29.8	29.4	31.4	25.5
Inflation Rates (%)	2.3	4.1	2.8	3.5	3.6	2.8	2.2	2.5	4.3	3.5
Budget Balance (% of GDP)	1.1	1.2	3.3	1.1	0.7	0.4	0.4	3.8	1.2	-2.9
Current Account Balance (% of GDP)	2.4	1.7	1.0	2.0	4.1	1.9	0.6	0.6	-6.4	25.6
Change in Money Supply (%)	25.4	13.2	11.0	6.7	-0.6	3.1	4.4	0.3	9.1	7.2
Total External Debt (%GDP)*	--	--	--	--	--	22.2	27.3	36.5	40.9	48.0
Exchange Rate (per US$, avg.)*	--	--	--	--	1 146	1 024	955	929	1 100	1 317
Gross Foreign Reserves (US$b)*	--	--	--	--	199.0	210.3	238.9	262.1	201.1	231.7
Merchandise Export Growth Rates (%)	19.9	-12.7	8.0	19.3	31.0	12.0	14.4	14.1	14.3	-20.3
Merchandise Import Growth Rates (%)	34.0	-12.1	7.8	17.6	25.5	16.4	18.4	15.3	21.8	-28.7

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations.
* Figures from IMF (2009c), *Republic of Korea: 2009 Article IV Consultation-Staff Report*, Washington D.C: IMF; $^{+}$ Projections.

Korea was affected by the global financial crisis by the last quarter of 2008. It witnessed a faster capital out flow than during the 1997-98 crisis which led to sharply lower asset prices, and dislocations in money markets, a record slump in exports, and a drop in domestic demand. Korean domestic banks and foreign banks in the country faced big reduction in their credit lines resulting in reduction in capital account (6% of GDP). The national currency – Won and equity markets declined by 30% and shortage of dollar led to problems in domestic money markets (IMF, 2009c).

Because of these the economy contracted by 5.1% in the last quarter of 2008 compared to that of 2007 (IMF, 2009e). The government announced a number of policy measures to face the impact of global recession. These included: (i) fiscal support measures equivalent to around 4% of GDP to promote fiscal expenditure expansion and tax reduction; (ii) allocated US$55b in foreign exchange reserves to provide swaps or loans to banks and trade related businesses; (iii) the Bank of Korea (BOK) cut interest rates; (iv) set up bank recapitalization fund and toxic asset fund to shield the banking sector from the global crisis and prevent serious deleveraging; (v) programmes such as ‘ Green New Deal Job Creation Plan’ to create 960, 000 jobs in four years (140, 00 jobs in 2009) by providing better training; (vi) welfare support to low income and disadvantaged sections; (vii) financial support for SMEs; and (viii) programmes to build energy saving and carbon reduction economy (IMF, 2009e; ESCAP, 2009, p.100).

According to IMF (2009e) these measures helped to ward off serious impacts of the global crisis in the following ways: (i) exchange rate devaluation helped to avoid deflationary pressures; (ii) the weak national currency –Won redirected domestic demand from imports to domestic production; (iii) the weak Won also sustained core inflation; (iv) external defaults and a credit crunch have been avoided; (v) helped bank credit to grow at healthy level; (vi) helped to increase government and private consumptions, and construction investment; and (vii) helped to stabilise and recover exports, industrial production, and the service sector activities. However, IMF opined that as domestic demand is constrained by highly leveraged households and SMEs, full recovery by the Korean economy depends on external demands and global financial conditions.

After a staff visit in December 2009, the IMF stated: "The Korean economy has bounced back impressively from the unprecedented capital outflows and dramatic collapse in export demand late last year" and concluded that various fiscal, monetary, and financial policy measures taken by the government has worked by keeping the banks adequately capitalized and maintaining stable conditions in financial markets (IMF, 2009f).

To recapitulate, because of the robustness of South Korea's financial sector and government's stimulus package has maintained the stability of the banking sector and financial markets in the face of serious global financial crisis, although the national currency and the equity market experienced negative impact. Also, the government has invested in maintaining the high skilled work force, creating large number of jobs, and social cohesion. But its predominantly export driven economy suffered when it exports were hit hard particularly when demands in the US dropped. In other words, the impact of global recession on South Korea appears to be influenced by the national context, that is, its NSI.

4. The Case of Taiwan

Taiwan is one of the high performance countries according to different categories of indicators: Investment climate - ranked 5th out of 50 countries surveyed (2009); Global competitiveness - 17th out of 134 countries (2008); Business Environment – 16th out of 82 surveyed (2009); IT industry competitiveness – 2nd out of 66 (2008); ICT development – 25th out of 154 (2009); E-government performance – 2nd out of 198 (2008); and Network readiness – 13th out of 134 (2009) (Government Information office-Taiwan, 2009a, ch.7). Taiwan's economy consists of three major sectors: Agriculture, Goods producing industry, and Services. In 1987 they contributed to the GDP 5.18%, 44.49%, and 50.3%, respectively. By 2008, their shares to GDP have changed to: Agriculture (employing 5.14% of work force) – 1.69%, Goods producing industry (employing 36.84% of work force) – 25.04%, and Services (employing 58.02% of work force) – 73.27%. During this period while the shares of Agriculture and Goods producing sectors declined significantly, that of Services has increased by 23%. In 2008, only annual change in GDP share (%) of the Goods producing industry was negative (-2.73%) (Government Information office-Taiwan, 2009, ch. 9).

To manage and ward of serious problems caused by the global financial crisis the government has announced a series of policy measures. These included: (i) announcement of full guarantee of all saving deposits and adoption of loose monetary policy to increase banks' liquidity (October 2008); (ii) establishment of special task force to support business operations with government assistance; (iii) mechanisms for debt negotiations between banks and borrowers; (iv) various financial measures to help small and medium enterprises (SMEs); (v) continuation of preferential home loan programmes; (vi) various measures to stimulate domestic demand and consumption such as issuing of consumption vouchers, construction of local infrastructure, cultivating high grade manpower and schooling safety net through investment in public works, subsidy for purchasing energy saving and low carbon emitting household appliances, and subsidy for low income workers who are main breadwinners (vii) special programmes to attract tourists from main land China, (viii) incentives to promote exports to main land China and emerging markets and also for imports from Taiwan; (ix) tax breaks and incentives to manufacturing and technical service firms, (x) reduction of vehicle tax to stimulate sales of new vehicles; and (xi) financial support for short-term skill development training programme in business enterprises during the work hours reduced under negotiation between the businesses and unions (CEPD, 2009).

Table 3 provides major economic indicators which show consistent real GDP growth until 2007 and major drop in 2008 and 2009 which suggest significant negative impact of Global recession on the economy. The recession also appears to have some impact on gross domestic investment rate (% of GDP), inflation rate, current account balance, budget balance and growth of exports and imports. However, the GDP per capita and foreign exchange reserves were maintained at high levels.

The impact of global recession was felt in Taiwan only from the second half of 2008 and during 2007 and the first half of 2008 it remained relatively unaffected. It was because of its strong financial sector which had relatively low exposure to the global financial crisis triggered by the US financial institutions. However, because of Taiwan's export markets such as the US and EU started experiencing severe recession by 2008, Taiwan's exports fell sharply and the real GDP growth (based on constant 2001 prices) in the third and fourth quarters of 2008 dropped to -1.05% and -8.61%, respectively (Government Information office-Taiwan, 2009).

Table 3: Taiwan - Main Economic Indicators							
Indicators	***2004***	***2005***	***2006***	***2007***	***2008***	***2009****	***2010****
Real GDP Growth Rates (%)	6.2	4.2	4.8	5.7	0.1	-1.9**	4.7[b]
GDP per capita (US$'000s - at PPP)	27.5[e]	29.6[e]	31.9[e]	34.6[e]	37.1[e]	39.4	41.5
Gross Domestic Investment Rates (% of GDP)	19.5	1.2	0.9**	1.9**	-10.8**	1.5	3.1
Inflation Rates (av; %)	1.6	2.3	0.6	1.8	3.5	-1.3	0.8
Budget Balance (% of GDP)	-2.4	-1.6	-0.7	-0.4	-1.3[e]	-5.2	-5.1
Current Account Balance (% of GDP)	5.7	4.9	7.2	8.6	6.3	9.6	9.4
Lending Rate (av; %)	3.5	3.8	4.1	4.3	4.2	3.2	3.6
Exchange rate NT$=US$ (av)	33.4	32.2	32.5	32.8	31.5	34.1	34.1
Foreign exchange reserves (US$b)	246.5	257.9	270.8	275.0	282.3	285.1	291.6
Change in Money Supply (%)	7.4	6.6	5.3	0.9	4.6[e]	4.1	5.7
Merchandise Export Growth Rates (%)**	21.1	8.8	12.9	10.1	3.6	-34.3[a]	32.6[c]
Merchandise Import Growth Rates (%)**	31.8	8.2	11.0	8.2	9.8	-41.2[a]	42.8[c]

Source: Economic Intelligence Unit (EIU) (2008), *Country Report – Taiwan*, London: EIU; Council for Economic Planning and Development (CEPD) – Taiwan (2009, 2010), *Taiwan's Economic Situation and Outlook*, Available at: http://www.cepd.gov.tw/encontent/m1.aspx?sNo=0001444&key=&ex=%20&ic=&cd= (Accessed on 27 March 2010).
* Forecasts by EIU; **e** -Estimates by EIU; ** Figures from CEPD; **a** - until April 2009; **b** - estimates by CEPD; **c** – February 2010 figures.

According to the Government of Taiwan, the initial impact of global recession Taiwan's economy included: (i) Taiwan Stock Exchange's (TWSE) benchmark TAIEX index lost about 40 percent of its value during the second half of 2008; (ii) unemployment increased to 5.03% at the end of 2008 and to 6.07% in July 2009 (compared to an average 4.14% unemployment rate in 2008); (iii) among employed workers (excluding the self-employed and workers in the agricultural sector), total monthly working hours and wages decreased significantly and on average, over the period from January to May 2009, they worked 10 hours less and received 7.4%, or about US$115, less wages per month as compared with the same five-month period in 2008; (iv) employees in the manufacturing sector were affected even more than others, as they worked 17.8 hours less and received 14.9% less wages per month than during the same period in 2008; and (v) exports witnessed a big drop between September to December 2008 (average monthly growth was -19.1%), and in December alone, exports dropped 41.9% (Government Information office-Taiwan, 2009, ch. 9).

Table 4: Taiwan - Share of Exports and Imports of the Major Trading partners										
Year	**EXPORTS**					**IMPORTS**				
	US	Japan	Europe	China (Incl. Hong Kong)	ASEAN 6	US	Japan	Middle East	China (Incl. Hong Kong)	ASEAN 6
2002	18.6	8.5	15.1	10.1	9.8	14.9	26.6	5.2	8.3	13.3
2008	12.0	6.9	11.7	39.0	15.0	10.9	19.3	16.2	13.7	10.7
2009	11.6	7.1	11.1	41.1	14.8	10.4	20.8	12.99	14.7	11.3
Changes in TWO-way Trade with Major Trading Partners (year-on-year %)										
2006	11.2	7.9	10.6	14.8	13.8	7.1	0.5	30.1	20.1	10.4
2007	-0.9	-2.2	9.7	12.6	16.7	17.0	-0.7	12.0	11.9	1.7
2008	-4.0	10.2	4.6	-0.8	7.3	-0.7	1.3	40.3	10.3	8.4
2009	-23.5	-17.4	-24.6	-15.9	-21.5	-31.0	-22.1	-42.1	-22.3	-22.8
2010 Jan-Feb	17.9	22.4	37.0	85.2	65.5	73.3	71.1	100.7	75.7	89.0
Source: Council for Economic Planning and Development (CEPD) – Taiwan (2009, 2010), *Taiwan's Economic Situation and Outlook*; Available at: http://www.cepd.gov.tw/encontent/m1.aspx?sNo=0001444&key=&ex=%20&ic=&cd= (Accessed on 27 March 2010).										

Table 4 shows the changes in the share of exports and imports of the major trading partners of Taiwan between 2002 and 2009. It is very clear that by 2009, China (including Hong Kong) has replaced the US which was the leading export market in 2002 and emerged as the predominant export market with 41%. Also, while the share of Japan and Europe declined, the share of ASEAN has increased significantly during the same period. Again in the area of imports, only China has increased its share among its traditional import partners, other than Middle East (which appears to have increased its share mainly because of high oil import bill).

It appears that global recession did not affect significantly Taiwan's investment in R&D and education. Taiwan's R&D investment increased from 2.57% of GDP in 2007 to 2.77% in 2008. Similarly, the investment in education increased from 20% of GDP in 2005 to 21% in 2008. Furthermore, in response to the global recession, the government announced in January 2009 that it would provide up to NT$13 billion (US$412.4 million) to assist students from families in financial distress, that to support students at all levels of education whose parents have been out of work involuntarily for at least one month. In September 2008 the government also started the Night Angel Illumination Program to provide financial support elementary school students from low-income, students without parents, and those from single-parent families. Over 10,000 students received support from this programme in 2008 and 2009. The programme also received support from the private sector (Government Information office-Taiwan, 2009, ch. 17).

By the last quarter of 2009 Taiwan has come out of recession as its GDP has registered 9.2% growth, which was the strongest since 2004 (*The Straight Times*, 23 February 2010, p. B14.).

To summarise, the impact of global recession on Taiwan appears to be influenced by the national context, that is, its NSI. While its strong financial sector has helped it to mitigate serious fallout from the crisis created by the financial institutions in the western countries, its predominant reliance on export driven growth has eventually has resulted in serious impact. However, trends in exports and imports suggests that Taiwan's dynamic NSI and its neighbourhood that includes China, Japan and ASEAN appear to have helped it to recover from the impact of global recession faster than expected.

5. The Case of Malaysia

Malaysia is one of the members of the Association of South-East Asian Nations (ASEAN), which is endowed with rich natural resources. It has been one of the more politically stable countries in the region. Malaysia has become an advanced economy, as it has witnessed rapid growth in the 1990s until the Asian financial crisis in 1997-98. Although it was not seriously affected by the crisis, it has slowed down its growth. However, it sustained its growth and in 2007, its GDP per capita (PPP basis) was the seventh in Asia. Malaysia's growth was achieved through attracting significant flow of FDI, large expansion of its labour force and capital stock. China has emerged an important trade partner of Malaysia since it joined the WTO in 2001. Malaysia has a large ethnic Chinese population which is likely to help deepen the trade relationship with China. Although Malaysia boasts of relatively well educated and English speaking workforce, its productivity levels are low compared to the newly industrialised Asian economies such as Korea and Singapore and suffers from some inadequacies and constraints such as limited access to higher education and low skill level. As the country's economy is dependent on export oriented growth, it has been investing in developing a good physical infrastructure (EIU, 2009b).

The contributions to GDP by different sectors in 2009 (estimate) were: agriculture - 10.1% ; industry: 42.3%; services: 47.6%. The agriculture products included: rubber, palm oil, cocoa, rice, timber, coconuts, and pepper. The industry included: rubber and oil palm processing and manufacturing, light manufacturing, electronics, tin mining and smelting, logging and timber processing, petroleum production and refining, and agriculture processing. Malaysia exported electronic equipment, petroleum and liquefied natural gas, wood and wood products, palm oil, rubber, textiles, and chemicals. Its export partners included (2009 estimate): Singapore 13.9%, China 12.2%, US 10.9%, Japan 9.8%, Thailand 5.4%, and Hong Kong 5.2%. Malaysia's imports included: electronics, machinery, petroleum products, plastics, vehicles, iron and steel products, and chemicals. Its import partners included (2009 estimate): China 13.9%, Japan 12.5%, US 11.2%, Singapore 11.1%, Thailand 6%, Indonesia 5.3%, South Korea 4.6%, Germany 4.2%, and Taiwan 4.2% (CIA, 2009).

The Asian financial crisis in 1997-98 has spurred Malaysia to strengthen its financial and banking sector by introducing “robust prudential regulation and supervision framework” , which helped to ensure that there is ‘virtually no toxic assets” in its financial system (IMF, 2009i, p.1). It opened up its economy gradually since the early 1990s, starting with manufacturing sector first and progressing to the services and allowing foreign equity up to 49% at first and progressively raising it to 100%. Malaysia also rationalised its financial sector by reducing the number of banks from 70 to just 9 and building their capacity to compete before opening the sector fully (IMF, 2009i). The financial sector is dominated by commercial banks. In 2009 (March), there were 39 commercial banks (9 domestic, 13 foreign owned, 11 domestic Islamic banks, and 8 foreign Islamic banks) with total assets of US$1.3trn. The global financial crisis did not affect the 9 Malaysian bank’s assets significantly and they escaped serious negative impact due to sufficient liquidity, strong capital ratios and limited foreign exposure. The financial services in industry are playing an important role in Malaysia’s economic growth. It accounted for 8% of its GDP and 2% of total employment. Malaysia’s financial asset base is equivalent to 512% of GDP compared to 500% in China and about 300% in Thailand. It emerged as the largest market for Islamic bonds (sukuk) with issuing of three quarter of global total of US$41b. Its stock market Bursa Malaysia is larger than other emerging bourses in South East Asia except Singapore. Since 2005, its national currency ringgit is traded against basket of currencies in a managed float regime and Malaysia has put a ban on offshore trading of the ringgit (EIU, 2009c).

Table 5: Malaysia: Main Economic Indicators

Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008^{e}***	***2009^{*+}***
Real GDP Growth Rates (%)	8.9	0.5	5.4	5.8	6.8	5.3	5.8	6.3	4.6^{*p}	-4.5
Per Capita GDP (US$ at ppp)^	--	--	--	--	10 854	11 531	12 349	13 223	13 852	13 266
Gross Domestic Savings Rates (% of GDP)	46.1	41.8	42.0	42.5	43.4	42.8	43.2	42.2	41.8	--
Gross Domestic Investment Rates (% of GDP)	26.9	24.4	24.8	22.8	23.0	20.0	20.9	21.9	19.8^{*p}	20.8
Inflation Rates (%)	1.5	1.4	1.8	1.0	1.5	3.0	3.6	2.0	5.4^{*p}	0.9
Lending Interest Rate (%)^	--	--	--	--	6.0	6.1	6.6	6.3	5.9	5.3
Foreign Exchange Rate (M$ = 1US$,av.)					3.80	3.79	3.67	3.44	3.33	3.62
Budget Balance (% of GDP)	-5.5	-5.2	-5.3	-5.0	-4.1	-3.6	-3.3	-3.2	-5.1	--
Current Account Balance (% of GDP)	9.0	7.9	7.1	12.0	12.0	14.5	16.1	15.6	17.4^{*p}	12.8
Total External Debt (% of GDP)*	--	--	--	--	42.3	38.1	33.7	27.9	24.9	25.8
Net Foreign Direct Investment (US$ b)*	--	--	--	--	2.6	1.0	0.0	-2.7	-0.1^{*p}	-2.3
Net Foreign Direct Investment (as % of GDP)*	--	--	--	--	2.1	0.7	0.0	-1.4	0.0	-1.1
Foreign Exchange Reserve	--	--	--	--	66.7	70.5	82.5	101.3	91.2	90.4

(US$ b)*										
Change in Money Supply (%)	5.3	2.3	6.0	11.1	25.2	15.6	17.1	9.5	14.4	--
Merchandise Export Growth Rates (%)	16.2	-10.4	6.9	11.3	20.8	11.5	13.4	9.6	11.5 [*p]	-13.1
Merchandise Import Growth Rates (%)	25.1	-10.0	8.2	4.4	26.4	9.2	14.7	12.0	6.8[*p]	-9.0
Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations. * IMF (2009), *Malaysia: 2009 Article IV Consultation—Staff Report*, Washington D.C.: IMF; ^ IMF (2009) *Malaysia – Financial Services Report*; e – Estimate; p – Preliminary; [+] Forecast										

Table 5 shows some main economic indicators of Malaysia for the period 2000 to 2009. It is clear that from 2002 it has achieved a real growth rate of 5-6% until the global financial crisis in 2008. It has registered a high domestic saving rates over the years and increased consistently the Per capita GDP, but it has reduced significantly its external debt (from 42% to 24% of GDP), increased its foreign exchange reserve to about US$90-100b by 2008. It appears the foreign exchange rate was not affected significantly. Malaysia achieved export growth rate of 10% year on year until the global recession started to affect it in 2008. Malaysia's import growth was less consistent ranging from 20% in 2004 to 12% in 2007. It is clear from the Table 5 that the global recession has affected both the exports and imports, and it also affected the inflation rate. In 2008, Malaysia's trade with China (excluding Hong Kong) accounted for 9.5%, while Japan accounted for 10.8%, Singapore – 14.7%, and the US – 12.5% (EIU, 2009c).

Malaysia announced two economic stimulus packages totalling RM67b to help arrest the economy sliding into deep recession (Treasury of Malaysia, 2009). Initially, it was slow to announce a stimulus package to tackle the fallout of the global financial crisis compared to other countries. It announced a US$1.9b (RM7b) stimulus package, that is 1% of GDP, in 2008. It was aimed at supporting strategic industries and promoting high-speed broad band (RM1.9b), supporting small scale infrastructure development projects (RM1.6b), affordable housing (RM1.5b), educations and skills training programmes (RM1b), and public transport and military facilities (RM1b) (ESCAP, 2009, p.142).

Malaysia has been badly affected by the global recession mainly because of the big drop in exports, record FDI outflows (US$27b in 2008), and increased volatility in the local financial market. This resulted in significant contraction of the economy in 2008-2009 (both the GDP and inflation have slowed). As total trade amounted to 200% of GDP, Malaysian economy was vulnerable to uncertainties in export markets. Exports fell by 23.4% in the first half of 2009 compared with same period in 2008. Industrial production index dropped by 12.7% compared with increase of 3.3% and total net FDI decreased to RM3.6b compared with RM19.7b during the same period. The domestic demand also slowed resulting in significant drop in imports. This left the current account surplus nearly unchanged. The unemployment caused by the global recession was small, as businesses have shortened the workweeks rather than labour-shedding. This helped to maintain consumer confidence. The Kuala Lumpur stock index fell by 30% between mid-2008 and March 2009 (but recovered by 25% in April-May). However, money markets remained stable. The real effective exchange rate of the national currency against US$ depreciated by 1.5% between October 2008 and March 2009 (IMF, 2009h; Treasury of Malaysia, 2009).

Despite some major impacts of the global recession on its economy, Malaysia was expected to manage the impact of recession well because of a number of factors. These included: (i) good foreign exchange reserves although it declined by US$35b in the second half of 2008 (it stood at US$87b - 40% of GDP in June 2009) ; (ii) good balance sheets of banks, corporate, and households; (iii) well diversified trade (both products and markets); (iv) strong central bank – Bank Negara Malaysia and its prudent policy regime; and (v) expected revival of international demand in 2010 (IMF, 2009h). Malaysia is taking the global recession as an opportunity to build a “new economic model” focused on services rather than manufacturing. That is, it intends to increase the service sector to 70% of GDP from 54% and establish “a knowledge-based economy” and reduce dependency on manufactured exports (manufactured goods now account for 72.5% of total exports against 14.8% for services). It also plans to shift manufacturing to more high-value-added in electronics, biotechnology and green technology. It also intends to reduce its dependence on Western export markets, such as the US, by diversifying its trade to South-east Asia, India, the Middle East and China (Burton, 2009).

To recapitulate, due to the open economy of Malaysia and it dependence on exports and significant trade share with Western economies, the global recession has affected Malaysia significantly. However, it appears to have warded off deeper recession mainly due to its strengths in its banking and financial system, high national savings, large foreign exchange reserve, heavy investment in skills development, strong support to high value added manufacturing and services, measures to prevent large scale unemployment, and nurturing relatively high quality work force.

6. The Case of Thailand

Like Malaysia, Thailand is also one of the members of the ASEAN. Thailand has been open to investment and the investment climate is more favourable compared to China, India and other neighbouring countries except Malaysia. Its industrial base included: tourism, textiles and garments, agricultural processing, cement, electric appliances, computers and parts, integrated circuits, automobiles and automotive parts. Thailand is the world's second-largest tungsten producer and third-largest tin producer. The GDP share of different sector in 2009 were (estimate): agriculture: 12.3%, industry: 44%, services: 43.7% . The agriculture sector employed 42.4% of the total work force, the industry 19.7% and the services sector 37.9% (2008 estimate). Its exports included textiles and footwear, fishery products, rice, rubber, jewellery, automobiles, computers and electrical appliances. Major export destinations and their share of its exports included (2009) : US 10.9%, China 10.6%, Japan 10.3%, Hong Kong 6.2%, Australia 5.6%, Malaysia 5% (estimated). Thailand's major imports included: capital goods, intermediate goods and raw materials, consumer goods, and fuels. Major import partners and their share of its exports included (2009): Japan 18.7%, China 12.7%, Malaysia 6.4%, US 6.3%, UAE 5%, Singapore 4.3%, South Korea 4.1% (estimated) (CIA, 2009).

Table 6: Thailand: Main Economic Indicators

Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009*+***
Real GDP Growth Rates (%)	4.8	2.2	5.3	7.1	6.3	4.5	5.1	4.9	2.5**	-2.8**
GDP per capita (US$ at ppp)*	--	--	--	--	6 356	6 797 c	7 327 c	7 835 c	8 075	7 713
Gross Domestic Savings Rates (% of GDP)	32.5	31.4	31.7	32.0	31.7	31.0	32.3	33.9	33.3 c	--
Gross Domestic Investment Rates (% of GDP)	22.8	24.1	23.8	25.0	26.8	31.4	28.5	26.8	29.6 c	--
Inflation Rates (%)	1.6	1.6	0.6	1.8	2.8	4.5	4.6	2.2	5.5**	-0.9**
Budget Balance (% of GDP)	-2.2	-2.4	-1.4	0.4	0.1	-0.6	1.1	-2.4	-1.2c	-4.7
Current Account Balance (% of GDP)	7.6	4.4	3.7	3.4	1.7	-4.3	1.1	6.1	0.5**	8.1**
Exchange rate Bt$=US$* (end period)	--	--	--	--	39.06	41.03	36.05	33.72	33.2**	34.3**
Foreign exchange reserves* (US$b)	--	---	--	--	49.8	52.0	66.9	87.4	106.0	99.1
External Debt (US$b)*	--	--	--	--	51.3	51.6	55.2	56.0	61.4	51.9
Change in Money Supply (%)	4.9	5.5	3.8	13.9	5.3	5.6	6.8	2.5	5.3	--
Lending Interest Rate* (av, %)	--	--	--	--	5.5	5.8	7.4	7.1	7.0	6.6
Foreign Direct Investment (US$b)	--	--	--	--	5.86	8.06	9.45	11.23	9.84	--
Merchandise Export Growth Rates (%)	19.5	-7.1	4.8	18.2	21.6	15.0	16.9	17.2	5.1**	-13.0**
Merchandise Import Growth Rates (%)	31.3	-3.0	4.6	17.4	25.7	25.9	9.0	8.7	26.5**	-25.9**
Origin of GDP (% real change)										
Agriculture	--	--	--	--	-2.4	-1.8	4.6	1.8	5.1	2.0
Industry	--	--	--	--	7.9	5.4	5.7	5.7	3.4	-7.0
Services	--	--	--	--	6.8	5.2	4.9	4.7	1.2	-2.9

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations.
* Economic Intelligence Unit (2009), *Country Report – Thailand*, London: EIU, p. 17. ** Fiscal Policy Office, Ministry of Finance (Thailand), *Thailand's Economic Projections for 2009 and 2010*, Available at: http://www2.mof.go.th/economic_report_detail.php?id=43 (Accessed on 26 March 2010), 2009 figures are forecasts; + - Forecast; c - Estimate.

Table 6 captures various economic indicators for Thailand from 2000 to 2009. Thailand was badly affected by 1997 economic crisis and it was slow to recover. However, since 2003 it witnessed significant real growth with average of 5.5% GDP growth until 2007. Between 2003 and 2005 the growth was driven by domestic demand and then by a strong external sector. The gross domestic savings and investment have been significant and consistent. It is clear Thailand's economic performance has been affected by the global recession in a number of areas such as inflation, budget balance, current account balance, and export and import growth. However, it appears to have avoided volatility in the exchange rate and interest rate. The foreign exchange reserves increased due to banks switching their assets abroad to domestic assets (IMF, 2009g), and avoided more external borrowings. The FDI fell and there was portfolio outflow. The percentage change of sectors' contribution to the GDP illustrates that manufacturing and services have been consistently doing well from 2005 until the global recession in 2008-09. The performance by the agriculture sector has been strong relatively and has contributed significantly to the GDP. The financial and corporate sector remained robust overall.

On the weak side, a number of problems are identified. There have been concerns about erosion of central bank's independence in determining monetary policy. The physical infrastructure of the country remains relatively poor, despite government programmes to improve it. The education system requires reform, modernization of curriculum, increasing the number of students progressing to secondary and tertiary levels in order to modernize its workforce, which is "characterised by a low level of technical skills and also by poor foreign language skills" (EIU, 2009a, p.6). About 72% of employees identified proficiency in English as a major constraint. Thailand's labour intensive export industries such as Textiles and Footwear are facing serious competition from Bangladesh, China, and its neighbourhood – Cambodia and Vietnam. Firms in Thailand are affected by three major constraints: heavy regulatory burden such as tax, labour, and customs regulations, shortage of skills, and poor infrastructure. Technological capability index (TCI) for all industries except three sectors – electronics & electrical appliances, machinery & equipment, and auto parts – are below average. The competitiveness of service and manufacturing firms are affected by lack of ICT capabilities (World Bank, 2006).

In response to the global financial crisis, in January 2009 the government announced a US$3.3b (116.7b - Baht) stimulus package to sustain economic stability by targeting free education programmes, job creation, low interest loans to farmers, lower water and electricity charges and support to low income families (ESCAP, 2009, p.142). In addition, in August 2009 the government approved a revised 1.06 trillion- baht, three-year investment program to revive the economy out of recession (*Asia News*, 24 March 2009). Other policy measures included: interest rate cuts, credit expansion guarantees for SMEs and exporters, and commitment to flexible exchange rate system (by Bank of Thailand).

The impacts of the global recession on Thailand is significant, particularly in the first quarter of 2009. These included: (i) private investment dropped sharply by 16.4%; (ii) sales of commercial vehicles fell by 40%; (iii) import of capital goods (at constant price) fell by 21.7%; (iv) number of applications for new projects by investors to the Board of Investment fell by 29%; (v) manufacturing output contracted by 22.6%; (vi) output of electrical appliances fell by 21%; (vii) manufacturing employment dropped by 3.7% (overall employment grew due to some segments of service sector); (viii) exports dropped by 22.6% by May (year on year, a record contraction); (ix) exports dropped by 28% to the US, 28.9% to Japan, 21.3% to China; (x) imports dropped by 35% as domestic consumption dropped; (xi) capital goods imports fell by 13.6% and imports of raw materials and intermediate goods fell by 18.2% (EIU, 2009b); (xii) SET index fell by 45% as foreign investors exited and also equity market volatility rose significantly in 2008 (IMF 2009g).

Since 2004 exports grew by 15 to 20% contributing about 65% of GDP. The global recession has affected the exports (which fell by 25.6% in January and 24.5% in February 2009, excluding gold) and hit the economy hard (*Asia News*, 24 March 2009). As a result, the economy contracted sharply by estimated -2.85% in 2009 (originally it was forecast to be -3.5%). However due to the recovery by the last quarter of 2009, driven by expansionary fiscal measures by the government, revival in the private sector, and also revival by Thailand's trade partners it is expected to recover to 3.5% in 2010 (Fiscal Policy Office, 2009).

To summarise, Thailand was affected significantly by the global recession in number of areas such as exports, manufacturing output, stock market, imports, and manufacturing employment. However, it has come out of recession by the last quarter of 2009 with upturn in exports and domestic demand stimulated by policy measures, and also due to good performance by the agriculture sector which performed strongly and appears to have provided a buffer against capital markets. Also, it appears that Thailand's economy is relatively less exposed to the ailing world economies such as the US and EU and more diversified, which has helped to avoid falling into deeper recession. Overall, the nature and shape of impacts of the global economic recession on Thailand appears to have been largely influenced by the strengths and weaknesses of its national innovation system.

7. The Case of Bangladesh

The global financial crisis was expected to affect Bangladesh's economy in three main areas: exports, remittances, and FDI. As the US and the EU are the major markets for its exports, the financial crisis in these markets are expected to impact on Bangladesh negatively. The remittances are made largely by its unskilled and semi-skilled workers from Gulf Cooperation Council countries (construction sector). The rest of the remittances come from the USA, EU, Malaysia and Singapore. While the migration of unskilled and semiskilled workers increased from 38% to 52% between 2000 and 2008, the skilled workers and professionals migration declined from 45% to 33% and 5% to 0.19% respectively.

In April 2009, the government announced a stimulus package of Tk.32.24b to manage the impact of the global financial crisis. This included: (i) additional Tk.25.5b subsidy for power, fertilizer and export; (ii) TK.5b for recapitalization of state owned lenders; (iii) increasing cash incentives by 2.5% to selected industries (jute, leather, and frozen foods); (iv) relaxing the conditions for repayment of rescheduled loans for exporters and yarn producers; and (vi) continuing refinancing of the export credit of the commercial banks through the central bank – Bangladesh Bank (Ministry of Finance, 2009).

Bangladesh Bank (BB) has initiated a number of measures to ward off the impact of global financial crisis such as: (i) imposing lending rate cap at 13% from second quarter of 2009; (ii) targeted lending programmes for listed commercial banks; (iii) extending 5% of loanable fund to agriculture sector at 2% interest rate; (iv) rescheduling of loan instalments receivable for major export sectors affected by global recession; (v) establishing 3 rural branches for each new urban branch. BB also introduced an expansionary monetary policy mitigate the impact of global recession in the fiscal year 2010, that is, the target growth rate of broad money is 15.5% to accommodate 6% real GDP growth and 6.5% inflation (World Bank, 2009).

Table 7: Bangladesh: Main Economic Indicators										
Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***
Real GDP Growth Rates (%)	5.9	5.3	4.4	5.3	6.3	6.0	6.6	6.4	6.2	5.9
Gross Domestic Savings Rates (% of GDP)	17.9	18.0	18.2	18.6	19.5	20.0	20.2	20.5	20.8	20.0
Gross Domestic Investment Rates (% of GDP)	23.0	23.1	23.2	23.4	24.0	24.5	24.7	24.3	24.2	24.2
Inflation Rates (%)	2.8	1.9	2.8	4.4	5.8	6.5	7.2	7.2	9.9	6.7
Budget Balance (% of GDP)	-6.1	-5.2	-4.7	-4.2	-4.2	-4.4	-3.9	-3.7	-4.6	-3.0
Current Account Balance (% of GDP)	-1.0	-2.5	0.3	0.3	0.3	-0.9	1.3	1.4	0.9	2.8
Change in Money Supply (%)	18.6	16.6	13.1	15.6	13.8	16.7	19.3	17.1	17.6	19.2
Merchandise Export Growth Rates (%)	8.3	12.4	-7.4	9.4	16.1	13.8	21.6	15.7	15.9	10.1
Merchandise Import Growth Rates (%)	4.6	11.5	-8.5	13.1	12.9	20.6	12.2	16.3	25.6	4.2
Foreign Currency Reserves (US$ billion)*	1.60	1.31	1.59	2.47	2.71	2.93	3.48	5.08	5.34	7.5+
Foreign Currency Reserves (as % of GDP)*	3.4	2.8	3.3	4.8	4.8	4.9	5.6	7.4	6.8	--
Foreign Direct Investment (US$ million)*	--	550	391	376	385	776	743	760	748	941+
Foreign Direct Investment (as % of GDP)*	--	1.2	1.2	1.1	1.0	0.9	0.9	0.8	0.7	--

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations. The World Bank (2009), *Bangladesh Economic Update*, September 2009, Washington D.C.: The World Bank. * These are figures for Fiscal years, starting from 1999-2000; Source: Ministry of Finance (2008), *Bangladesh Economy and Global Financial Crisis: Policy Response*, Dhaka: Government of Bangladesh. + Estimates

Table 7 provides major macroeconomic indicators for Bangladesh. The GDP growth in Bangladesh started increasing since the 1990s and particularly it has been growing at the rate of about 6% from 2004. However, about 75% of the total population lives in rural areas and 44% of them live below poverty. Also the disparity between eastern and western regions has grown over the years. In the 1970s, the economy was based on agriculture which contributed 38% of GDP. This declined to 21% of GDP by 2007-2008 and the contribution of industrial sector increased from 15% to 30% during the same period. This was achieved by economic liberalization and opening up the economy for private investment. The investment to GDP reached over 24% and the government is aiming to reach 30% to achieve economic growth rate over 10%. The gross domestic savings has been 23-24% of GDP since 2001. The inflation rate has reached about 10% first time in 2007-08 due to international prices in fuel, fertilizer and food items and also due to natural disasters. The budget deficit has been kept at manageable limit (less than 5%) since 2002. Private sector credit (% GDP) grew from 3% in 1973-74 to 35% in 2006-07 and its share in the total domestic credit increased from 24% in 1973-74 to 74% in 2006-07. Market capitalization of all shares and debentures listed in Dhaka Stock Exchange has gone up from 8.7% of GDP in 2007 to 14.6% in 2008. Bangladesh's exports in 2008 were composed of Readymade garments (RMG) – 76%, Frozen food – 4%, Jute and Jute goods – 3%, Leather and Leather goods – 2%, and others – 15%. Its main imports included capital machinery – 36%, and major primary goods – 17%. Remittances from expatriate workers has become an important sources of revenue for the country, as man power exports from Bangladesh witnessed large growth between 2002 to 2008 (i.e. 225300 to 875100). In 2001-02 the remittance was US$2.5b which amounted to 5.3% of GDP and 41.8% of export. This increased to US$7.9b in 2007-08 which amounted to 10% of GDP and 56.1% of exports. The average exchanges rate for the national currency Taka against the US$ were: 58.94 take in 2003-04, 61.39 in 2004-05, 67.08 in 2005-06, 69.03 in 2006-07, and 68.60 in 2007-08. FDI as % of GDP declined during 2007-08 and stood at 7%. The foreign exchange reserve was US$ 5.6b in February 2009 (Ministry of Finance, 2008, 2008a).

Table 8: Bangladesh: Main Economic Indicators

Indicators	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08**
EXPORTS:								
Total primary Commodities (US$ million)	484	390	462	553	648	773	832	987
Share of Total Exports (%)	7.5	6.5	7.1	7.3	7.5	7.3	6.8	7.0
Total Manufacturing Goods (US$ million)	5 983	5 596	6 086	7 050	8 007	9 753	11 346	13 123
Share of Total Exports (%)	92.5	93.5	92.9	92.7	92.5	92.7	93.2	93.0
Exports - GRAND TOTAL	**6 467**	**5 986**	**6 548**	**7 603**	**8 655**	**10 526**	**12 178**	**14 110**
Annual Change (%)	12.4	-7.4	9.4	16.1	13.8	21.6	15.7	15.9
Exports as % of GDP	13.8	12.6	12.6	13.5	14.3	17.0	17.8	17.9
IMPORTS:								
Major Primary Goods (US$ million)	1 046	812	1 133	1 339	1 676	1 854	1 957	3 407
Share of Total Imports (%)	11.2	9.5	11.7	12.3	12.8	12.6	12.3	16.7
Major Industrial Goods (US$ million)	1 380	1 311	1 548	1 910	2 662	3 002	3 055	3 969
Share of Total Imports (%)	14.8	15.4	16.0	17.5	20.3	20.4	19.1	19.5
Capital Machinery (US$ million)	482	554	548	729	1 115	1 539	1 545	1 415
Share of Total Imports (%)	5.2	6.5	5.7	6.7	8.5	10.4	9.7	7.0
Other Products (US$ million)	6 027	5 863	6 429	6 925	7 694	8 351	9414	11 582
Share of Total Imports (%)	64.6	68.7	66.6	63.5	58.5	56.6	60.0	56.9
Imports - GRAND TOTAL	9 335	8 540	9 658	10 903	13 147	14 746	15 971	20 373
Annual Change (%)	11.5	-8.5	13.1	12.9	20.6	12.2	8.3	27.6
Imports as % of GDP	19.9	18.0	18.6	19.3	21.8	23.8	23.3	25.8

Source: Ministry of Finance (2008), *Bangladesh Economy and Global Financial Crisis: Policy Response*, Dhaka: Government of Bangladesh, p.58, 61, and 64.

Table 8 presents exports and imports statistics for Bangladesh between 2000-01 to 2007-08. The exports consist of primary commodities (frozen food, raw jute, tea, agricultural products and other primary commodities – in that order), and manufacturing goods (readymade garments, knitwear, jute goods, leather, jute goods, leather, engineering products, shoe, and others – in that order). Total exports more than doubled during this period and increased its share of GDP from 13% to 18%. The RMG export which forms about 75% of total exports was maintained mainly because the export to the US did not decline significantly. Also, orders from Europe increased for essential leather items as cost of production is lower in Bangladesh than India and China (World Bank, 2009). The imports consisted of primary goods (12-16% of total imports), industrial goods (15 to 20%), capital machinery (6-9%) and other imports (56 to 65%). Total imports also more than doubled during this period and increased its share of GDP from 18% to 26%.

The global recession has significantly affected Bangladesh in number of areas: (i) the export was in seven months export of raw jute decreased by 15.20% jute goods by 19.80%, leather goods by 31.80% and frozen food by 50% (according to Export promotion Bureau); (ii) export of readymade garments decreased by 4.98% and 17.58% in January and February 2009 respectively; (iii) manpower export was also affected, as many workers returned home from Malaysia (which cancelled visas of 55, 000 workers), Kuwait, Dubai, and South Arabia; (iv) jute, sugar, and spinning industries were affected and 17 out of 80 jute mills fully stopped production; (v) over 150,000 workers lost their jobs; (vi) Tk30b worth goods from spinning mills remained unsold (Manik, 2009).

Although the global recession was expected to have negative impact on Bangladesh, "its impact is still expected to be less severe than in most other economies" (Ministry of Finance, 2009, p. 3). According to the World Bank, "Bangladesh has weathered the global economic crisis well so far" and "low integration with the world economy helped cushion Bangladesh from the negative effects of the crisis" (World Bank, 2009, p.1). A number of factors that enabled Bangladesh to avoid serious problems included: (i) limited exposure to global economy in terms of exports (18% of GDP), (ii) its predominant exports-readymade garments are low priced product for low end market which is relatively recession resistant; (iii) low international food and oil prices, (iv) importance of agriculture for economic growth (bumper rice crop during the year); (v) presence of large informal sector comprising of domestic trade and commerce; (vi) minimal exposure to international capital market (i.e. less vulnerable to withdrawal of foreign capital); and (vii) maintaining sustainable level of budget deficit and public debt; and (viii) significant appreciation of the national currency Taka against many currencies such as Euro, Canadian$ and Australia $ has made imports from these countries cheaper (Ministry of Finance, 2009; World Bank, 2009).

In addition, lower inflation, strong remittance flows leading to external current account surplus, significant export growth, and declining imports helped to reduce the negative impact of global crisis on Bangladesh. These factors also contributed to increased liquidity in the banking system during 2009. The deposits held with the central bank – Bangladesh Bank – by the commercial banks increased from Tk18.6 b in June 2008 to Tk128b by the end of June 2009 (i.e. 75% growth compared to just 12% in 2008).

However, the second half of 2009 witnessed flagging growth in remittances (declining from 30.9% in first half to 15.7% in second half) and exports (RMG exports declined by 6% and non readymade goods registered negative growth). The World Bank warned that the export growth will slow down further, as demands in the US and European markets may take longer to return to previous levels. The remittances also could be affected if the global economic conditions continue to worsen. It also warned that inflationary pressures may re-emerge affecting the poor population badly. It identified structural problems which needs policy attention: economic governance, urban management, infrastructure development, market oriented vocational skills and quality secondary and tertiary education (World Bank, 2009). IMF also cautioned that the growth momentum will be slowed due to increased inflation, weak imports of capital machinery, sluggish exports and private sector credit, declining demand for Bangladeshi workers abroad, and also uncertainty about strong performance of the agriculture sector as in FY2009 (IMF, 2010, p. 2).

To summarize, Bangladesh economy was affected by the global recession mainly in exports and remittances, particularly in the second half of 2009. However, the impact was not very severe because its economy is less integrated with the world economy with limited exposure in terms of exports, its predominant exports-readymade garments are low priced product for low end market which is relatively recession resistant, importance of agriculture for economic growth, presence of large informal sector comprising of domestic trade and commerce, and minimal exposure to international capital market. Also, its economy depends on remittances from workers mainly in Malaysia and the Middle East.

8. The Case of Nepal

The growth rate of Nepal's economy in the previous 50 year period was very low and barely sufficient to cope with population growth rate and its GDP per capita (US$470) income ranks amongst the lowest in the world. As the rate of savings was about 11.5% of GDP, the economy depended on foreign assistance to meet investment requirement. However, between 1996-97 to 2006-07 human development index improved and poverty incidence reduced from 42% to 31%. The economy is driven and sustained by agriculture (which can be affected by erratic rains and snowfalls), tourism, manpower exports (income from foreign remittances), other exports, and foreign assistance. Remittances in 2008 amounted to 20% of GDP.

In 2006 the internal conflict (between the government forces and the Maoists) in Nepal came to an end and with that the monarchy also came to an end. The country is going through transition from feudalism to industrial capitalism and aims to achieve rapid socio-economic transformation with a three pronged strategy: (i) promotion of private investment in growth propelling sectors; (ii)

Public-private partnership in large infrastructure projects; (iii) cooperatives in rural areas in agriculture related activities and public distribution (IMF, 2008).

Nepal has introduced a number of structural reforms since 2006. That is, reforms to tax administration to reduce leakages and broaden the tax base, financial sector reforms through Bank and Financial Institutions Act to strengthen financial sector's integrity and financial stability, and improvements to public expenditure management and increased fiscal transparency. The central bank – Nepal Rastra Bank (NRB) has been maintaining the exchange rate peg to Indian Rupee which maintain inflation broadly in line with that of India. However, banking sector reforms are slow, enforcement of prudential regulation is weak, and the public sector accountability mechanisms are inadequate (IMF, 2009a). IMF identified other problems such as loose monetary conditions resulting in "real negative interest rates, rapid and potentially destabilising stock market and property prices, and some capital flight to India"(IMF, 2008a).

Table 9 shows macroeconomic indicators for Nepal between 2001 and 2009. The real GDP growth has been maintained around 4% since 2006 except 2007 (due to poor performance by agriculture sector). The gross domestic savings (% of GDP) has remained about 9 to 11%. The inflation has remained stable during 2006 to 2008 (mainly due to the exchange rate peg to Indian Rupee), but it reached double digit in 2009 due to high food prices. Gross domestic investment has increased marginally over the years. Budget balance and current account balance have been under sustainable levels and the money supply growth has increased by 10 to 15% until 2008. Export growth rate has been inconsistent while the import growth rate has been about 10% to 15% since 2006. The top ranking categories of exports in 2007 were as following: 1. Manufactured goods (US$300.5m); 2. Knotted carpets and other textile floor covering (US$111.1); 3. Food and live animals (US$62.7); 4. Women's' and girls' trousers, bib and brace overalls, breaches and shorts of woven textile fabrics (US$39.5m); 5. Mens' and girls' trousers, bib and brace overalls, breaches and shorts of woven textile fabrics (US$39.1m); and 6. Plated or zinc-coated iron and non-alloy steel flat-rolled products (US$38.2m) (ICON, 2007). However, the export sector is very small compared to the total economy. This mainly because of the land locked nature of Nepal and higher transportation costs involved (which adds more than 15% to the total cost of products). Also the manufacturing sector is very small (7% of GDP) (Bhattarai, 2009).

In 2008, the share of agriculture sector in GDP was 32% (36% in 2001), the non-agriculture sector was 68% (64% in 2001), the share of manufacturing declined to 7% from 9%, and the share of service sector increased from 47% to 51% as linkages with global economy is expanding. The Labour Act of 1992 imposed certain restrictions on employers in hiring contract workers and laying off permanent workers (Khanal, 2009).

Although Nepal’s financial system is under developed, it is comparable to other counties in the region such as Sri Lanka, Bangladesh, and Vietnam. In 2007 the total assets of the banking system to GDP amounted to 81% of which one third belonged to public sector banks. The role of stock exchange in Nepal remained marginal. The banking sector has witnessed growing number of deposit-taking institutions, and rapid credit growth driven by mostly smaller banking institutions (IMF, 2008b). The central bank – NRB has taken regulatory measures against risky bank activities to avoid crisis, particularly the real estate based and margin lending activities by commercial banks. As a result the stock prices have stabilised, although land prices remain high.

Because of weak linkages to global financial markets, Nepal was not expected to be affected directly by the global financial crisis. However, it was expected to have some indirect impact on exports, tourism receipts, remittance flow, and aid flow. Until the early 2009, these areas have not been seriously affected compared to previous year. The devaluation of the national currency per US$ by 12.2% during 2008-09 appears to have significantly contributed to the export growth.

However, there seems to have some delayed impact on the economy and the overall impact of global recession appears to be mixed in Nepal.

The governor of the Bank for Nepal stated (IMF, 2009b, p.1-2):

> Contrary to our worst fears, remittance remained robust, tourism did not decline, aid commitments and exports did not suffer much. Domestic financial market remained stable although we have our own worries of property and stock market bubbles, high credit-to-deposit ratio in the banking sector and above all, a serious unemployment problem. At the same time fiscal burden created due to rising petroleum prices in the past is yet to be made up.

According to IMF (2009, p.1): “despite the recent political fragility and the global financial crisis, the macroeconomic situation in Nepal remains broadly stable.” But the real GDP growth in 2009 was lower than previous year due to power shortages, difficult industrial labour relations, and bad weather. Due to continued growth in remittances the current account and balance of payment remained surplus and also the foreign exchange reserve was high (8 months imports). The budget deficit was maintained at 1.5% of GDP through strong revenue growth and under spending. But the inflation reached 13% due to high food prices.

Table 9: Nepal: Main Economic Indicators										
Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009****
Real GDP Growth Rates (%)	5.9	4.7	0.2	3.8	4.4	2.9	4.1	2.6	4.7[+]	4[+]
Gross Domestic Savings Rates (% of GDP)	14.1	11.7	9.5	8.6	11.7	11.6	9.0	9.7	11.5	--
Gross Domestic Investment Rates (% of GDP)	22.6	22.3	20.2	21.4	24.5	26.5	26.8	28.0	32.0	--
Inflation Rates (%)	3.4	2.4	2.9	4.8	4.0	4.5	8.0	6.4	7.7	13[+]
Budget Balance (% of GDP)	-4.3	-5.5	-5.0	-3.3	-2.9	-3.1	-3.8	-4.1	-4.0	--
Current Account Balance (% of GDP)	2.9	4.5	4.2	2.4	2.7	2.0	2.2	-0.1	2.6	--
Change in Money Supply (%)	21.8	15.2	4.4	9.8	12.8	8.3	15.6	13.8	20.9	--
Merchandise Export Growth Rates (%)	37.6	4.6	-18.8	4.3	8.9	13.0	2.2	1.2	11.0	--
Merchandise Import Growth Rates (%)	22.1	-0.2	-10.6	13.6	10.6	13.8	15.8	15.0	26.0	--

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Tables 1 to 9, pp. 174-182, New York: United Nations.
* Either estimated figure or for only part of the year. + IMF (2009), *Nepal-Assessment Letter for the Asian Development Bank*, August 17. Available at: http://www.imf.org/external/pp/longres.aspx?id=4349 (Accessed on: 23 March 2010)

To recapitulate, Nepal was not expected to be seriously affected by the global financial crisis as it is not strongly linked to global financial markets. However, it was expected to have some indirect impact on exports, tourism receipts, remittance flow, and aid flow. But, until the early 2009, remittance remained strong, tourism, aid commitments and exports did not decline significantly. Other factors that influenced the weak impact of global crisis on the national economy included the marginal role played by the stock exchange in Nepal, Nepal's under developed financial system, the ability of the central bank - NRB to take regulatory measures against risky bank activities to avoid crisis, particularly the real estate based and margin lending activities by commercial banks, and the influence of it NSI neighbourhood (India), i.e. exchange rate peg to Indian Rupee which helped maintain inflation broadly in line with that of India.

9. Analysis of Cases

Table 10: Comparison of Real GDP Growth Rates (%) among Case Countries										
Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009****
South Korea	8.5	3.8	7.0	3.1	4.7	4.2	5.1	5.0	2.2	-1.8
Taiwan	--	--	--	--	6.2	4.2	4.8	5.7	0.1	-1.9
Malaysia	8.9	0.5	5.4	5.8	6.8	5.3	5.8	6.3	4.6	-4.5
Thailand	4.8	2.2	5.3	7.1	6.3	4.5	5.1	4.9	2.5	-2.8
Bangladesh	5.9	5.3	4.4	5.3	6.3	6.0	6.6	6.4	6.2	5.9
Nepal	5.9	4.7	0.2	3.8	4.4	2.9	4.1	2.6	4.7	4

Source: ESCAP (2009), *Economic and Social Survey of Asia and the Pacific 2009,* Adapted from Table 1, p. 174, New York: United Nations.* Either estimated figures or for only part of the year/ These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections.

Table 10 clearly shows that all the case economies have been growing until the global recession and they experienced some negative impact on their GDP growth rate. The differences are found in the drivers of each economy, composition of sector-wise contribution to GDP, composition of trade and trade partners, and the degree of integration of the national economy to the global institutions. For example, Bangladesh and Nepal are dependent significantly on remittances and aids, which is not the case in other economies. South Korea and Taiwan are more dependent on exports of manufactured goods compared to Malaysia and Thailand. But Malaysia is more dependent on exports of manufacture goods than Thailand. The impact of global recession and the shape of recovery by each country show the influence of each country's NSI.

Table 11 shows that the gross domestic savings as % of GDP across case countries except Taiwan (because data not available). Clearly Malaysia has consistently registered a higher savings rates, followed by South Korea, Thailand, Bangladesh, and Nepal. One of the main reasons for Malaysia to experience less severity of the global recession despite big capital outflow was due to high domestic savings. Table 12 shows that the gross domestic investment rate in South Korea has been about 30% and between 20 to 30% among other countries, except Taiwan.

Table 11: Comparison of Gross Domestic Savings Rates (% of GDP) among Case Countries

Indicators	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008**	*2009**
South Korea	33.9	31.9	31.4	33.0	35.0	33.2	31.5	30.8	30.7	28.8
Taiwan	--	--	--	--	--	--	--	--	--	--
Malaysia	46.1	41.8	42.0	42.5	43.4	42.8	43.2	42.2	41.8	--
Thailand	32.5	31.4	31.7	32.0	31.7	31.0	32.3	33.9	33.3	--
Bangladesh	17.9	18.0	18.2	18.6	19.5	20.0	20.2	20.5	20.8	20.0
Nepal	14.1	11.7	9.5	8.6	11.7	11.6	9.0	9.7	11.5	--

Source: ESCAP (2009), *Economic and Social Survey of Asia and the Pacific 2009*, Adapted from Table 1, p. 174, New York: United Nations.* These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections and some of them are estimated figures.

Table 12: Comparison of Gross Domestic Investment Rates (% of GDP) among Case Countries

Indicators	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008**	*2009**
South Korea	31.0	29.3	29.1	30.0	30.4	30.1	29.8	29.4	31.4	25.5
Taiwan	--	--	--	--	19.5	1.2	0.9	1.9	-10.8	1.5
Malaysia	26.9	24.4	24.8	22.8	23.0	20.0	20.9	21.9	19.8	20.8
Thailand	22.8	24.1	23.8	25.0	26.8	31.4	28.5	26.8	29.6	--
Bangladesh	23.0	23.1	23.2	23.4	24.0	24.5	24.7	24.3	24.2	24.2
Nepal	22.6	22.3	20.2	21.4	24.5	26.5	26.8	28.0	32.0	--

Source: ESCAP (2009), *Economic and Social Survey of Asia and the Pacific 2009*, Adapted from Table 1, p. 174, New York: United Nations.* These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections and some of them are estimated figures.

Table 13 shows that Bangladesh and Nepal had experienced higher inflation since 2006 until the global recession and all countries have seen increase in inflation in 2008 and 2009. Table 14 shows that all countries except Korea have registered negative budget balance but within sustainable level (less than 5%). Table 15 shows that Malaysia has maintained high current account balance followed by Taiwan.

Table 13: Comparison of Inflation Rates (%) among Case Countries

Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009****
South Korea	2.3	4.1	2.8	3.5	3.6	2.8	2.2	2.5	4.3	3.5
Taiwan	--	--	--	--	1.6	2.3	0.6	1.8	3.5	-1.3
Malaysia	1.5	1.4	1.8	1.0	1.5	3.0	3.6	2.0	5.4	0.9
Thailand	1.6	1.6	0.6	1.8	2.8	4.5	4.6	2.2	5.5	-0.9
Bangladesh	2.8	1.9	2.8	4.4	5.8	6.5	7.2	7.2	9.9	6.7
Nepal	3.4	2.4	2.9	4.8	4.0	4.5	8.0	6.4	7.7	13

Source: ESCAP (2009), *Economic and Social Survey of Asia and the Pacific 2009*, Adapted from Table 1, p. 174, New York: United Nations.* These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections and some of them are estimated figures.

Table 14: Comparison of Budget Balance (% of GDP) among Case Countries

Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009****
South Korea	1.1	1.2	3.3	1.1	0.7	0.4	0.4	3.8	1.2	-2.9
Taiwan	--	--	--	--	-2.4	-1.6	-0.7	-0.4	-1.3[e]	-5.2
Malaysia	-5.5	-5.2	-5.3	-5.0	-4.1	-3.6	-3.3	-3.2	-5.1	--
Thailand	-2.2	-2.4	-1.4	0.4	0.1	-0.6	1.1	-2.4	-1.2	-4.7
Bangladesh	-6.1	-5.2	-4.7	-4.2	-4.2	-4.4	-3.9	-3.7	-4.6	-3.0
Nepal	-4.3	-5.5	-5.0	-3.3	-2.9	-3.1	-3.8	-4.1	-4.0	--

Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009*, Adapted from Table 5, p. 178, New York: United Nations.* These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections and some of them are estimated figures.

Table 15: Comparison of Current Account Balance (% of GDP) among Case Countries

Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009****
South Korea	2.4	1.7	1.0	2.0	4.1	1.9	0.6	0.6	-6.4	9.6
Taiwan	--	--	--	--	5.7	4.9	7.2	8.6	6.3	12.8
Malaysia	9.0	7.9	7.1	12.0	12.0	14.5	16.1	15.6	17.4	12.8
Thailand	7.6	4.4	3.7	3.4	1.7	-4.3	1.1	6.1	0.5	8.1
Bangladesh	-1.0	-2.5	0.3	0.3	0.3	-0.9	1.3	1.4	0.9	2.8
Nepal	2.9	4.5	4.2	2.4	2.7	2.0	2.2	-0.1	2.6	--

Source: ESCAP (2009), *Economic and Social Survey of Asia and the Pacific 2009*, Adapted from Table 1, p. 174, New York: United Nations.* These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections and some of them are estimated figures.

Table 16: Comparison of Merchandise Export Growth Rates (%) among Case Countries										
Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008****	***2009****
South Korea	19.9	-12.7	8.0	19.3	31.0	12.0	14.4	14.1	14.3	-20.3
Taiwan	--	--	--	--	21.1	8.8	12.9	10.1	3.6	-34.3
Malaysia	16.2	-10.4	6.9	11.3	20.8	11.5	13.4	9.6	11.5	-13.1
Thailand	19.5	-7.1	4.8	18.2	21.6	15.0	16.9	17.2	5.1	-13.0
Bangladesh	8.3	12.4	-7.4	9.4	16.1	13.8	21.6	15.7	15.9	10.1
Nepal	37.6	4.6	-18.8	4.3	8.9	13.0	2.2	1.2	11.0	--
Source: ESCAP (2009), *Economic and Social Survey of Asia and the Pacific 2009*, Adapted from Table 1, p. 174, New York: United Nations.* These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections and some of them are estimated figures.										

Table 16 and 17 show comparison of export and import growth rates among case countries. All countries registered declining exports and imports after the global recession set in 2008. Except Nepal all other countries have witnessed consistent export growth. Between 2003 and 2008, all countries achieved significant import growth. But in 2008 and 2009 all countries except Nepal have experienced big drop in their export growth rates. Taiwan and South Korea were particularly hit hard because of their reliance on Western markets.

Table 17: Comparison of Merchandise Import Growth Rates (%) among Case Countries										
Indicators	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009****
South Korea	34.0	-12.1	7.8	17.6	25.5	16.4	18.4	15.3	21.8	-28.7
Taiwan	--	--	--	--	31.8	8.2	11.0	8.2	9.8	-41.2
Malaysia	25.1	-10.0	8.2	4.4	26.4	9.2	14.7	12.0	6.8	-9.0
Thailand	31.3	-3.0	4.6	17.4	25.7	25.9	9.0	8.7	26.5	-25.9
Bangladesh	4.6	11.5	-8.5	13.1	12.9	20.6	12.2	16.3	25.6	4.2
Nepal	22.1	-0.2	-10.6	13.6	10.6	13.8	15.8	15.0	26.0	--
Source: ESCAP (2009), *Economic and Social Survey of Asia and the Pacific 2009*, Adapted from Table 1, p. 174, New York: United Nations.* These are figures are based on ESCAP(2009) and also other sources listed in previous tables under individual case country sections and some of them are estimated figures.										

Table 18: Comparison of External Financing – Total Bonds, Equities, and Loans among Case Countries* (In US$ million)					
Country	***2004***	***2005***	***2006***	***2007***	***2008***
Total Emerging Markets	*325 729.6*	*454 640.3*	*540 183.9*	*716 401.2*	*446 540.0*
Asia	*152 357.7*	*189 506.2*	*221 354.8*	*299 440.3*	*184 925.9*
South Korea	31 016.0	47 668.6	38 677.3	59 814.4	34 258.3
Taiwan	26 558.0	19 084.9	22 189.9	24 623.2	18 012.2
Malaysia	7 977.8	6 154.6	7 686.9	7 068.2	5 260.2
Thailand	4 141.3	6 310.9	4 784.1	2 494.2	3 070.4
Bangladesh	176.8	16.7	106.5	57.5	65.4
Nepal	--	--	--	--	15.0
Source: IMF (2009), Global Financial Stability Report: Responding to the Financial Crisis and Measuring Systematic Risk, April, Washington D.C: IMF, Adapted from Table 14, p. 202. * External public syndicated issuance, excluding bilateral deals					

Table 18 shows that how big is the size of external financing to each selected economy and it's clear that South Korea and Taiwan far ahead of Malaysia and Nepal is hardly linked to external finance. Table 19 clearly shows the dependence of Bangladesh and Nepal on overseas aids and workers' remittances.

Table 19: Comparison of Official Development Assistance (ODA) and Workers' Remittances among Case Countries										
	ODA Received				***Workers' Remittances***					
	US$ million		*% of GNI*		*US$ million*			*% of GNI*		
Indicators	***2000***	***2006***	***2000***	***2006***	***1995***	***2000***	***2006***	***1995***	***2000***	***2006***
South Korea	--	--	--	--	291.4	62.9	136.1	0.1	0.0	0.0
Taiwan	--	--	--	--	--	--	--	--	--	--
Malaysia	45.4	240.3	0.1	0.2	--	--	--	--	--	--
Thailand	698.2	-215.6	0.6	-0.1	--	--	--	--	--	--
Bangladesh	1 167.8	1 222.7	2.5	1.9	1 201.7	1 958.1	5 417.7	3.1	4.2	8.4
Nepal	387.3	514.3	7.0	6.3	56.8	11.5	1 373.3	1.3	2.0	16.8
Source: ESCAP, *Economic and Social Survey of Asia and the Pacific 2009,* Adapted from Table 11, p. 184, New York: United Nations.										

Table 20: Comparison of Gross Domestic Expenditure on R&D (GERD) as % of GDP among Case Countries								
Country	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***
South Korea	2.39	2.59	2.53	2.63	2.85	2.98	3.22	3.47
Taiwan	1.97	1.94	2.06	2.16	2.27	2.32	2.39	2.57 (2.77)+
Malaysia	0.49	--	0.69	--	0.60	--	0.64	--
Thailand	0.25	0.26	0.24	0.26	0.26	0.23	0.25	--
Bangladesh	--	--	--	--	--	--	--	--
Nepal	--	--	--	--	--	--	--	--
Source: UNESCO - Statistics on Research and Development, and Education. Available at: http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx (Accessed: 23 March 2010). National Science Council (2009), *Indicators of Science and Technology – Taiwan, 2009,* Available at: https://nscnt12.nsc.gov.tw/WAS2/English/AsEmain.aspx (Accessed on 23 March 2010) * Based on national estimation; + 2008 figure.								

Table 21: Comparison of Public Expenditure on Education among Case Countries				
Country	***As % of GDP***		***As % of Total Government Expenditure***	
	2000	***2005***	***2000***	***2005***
South Korea	4.3	4.6	14.7	16.5
Taiwan (% of GNP) N	5.4	5.9 (5.5*)	17.8	20.0 (21.0*)
Malaysia	6.2	6.2	26.7	25.2
Thailand	5.4	4.2	31.0	25.0
Bangladesh	2.4	2.7	15.0	14.2
Nepal	3.0	3.4	13.2	14.9
Source: UNESCO - *Statistics on Research and Development, and Education*. Available at: http://stats.uis.unesco.org/unesco/ReportFolders/ReportFolders.aspx (Accessed: 23 March 2010). N - Ministry of Education – Taiwan (2008), *Educational Expenditure*. Available at: http://english.moe.gov.tw/ct.asp?xItem=10983&CtNode=816&mp= 1 (Accessed: 23 March 2010). * 2008 Figures.				

Table 20 and Table 21 illustrate the investment in R&D and education in case countries. For Bangladesh and Nepal, data were not available for R&D investment. South Korea and Taiwan are far ahead of Malaysia and Thailand in R&D investment, and Thailand is significantly behind Malaysia. Almost all countries are investing significantly in education, but in terms of GDP, Bangladesh has been investing less than Nepal, and Malaysia has been investing more than others.

Table 22: Some Major Components of NSI that Could have Mitigating Impact on Recession – South Korea

Components of NSI	*Nature/ Level of Presence in National Economy of South Korea*
1. The general investment climate and economic policy framework: (a)Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI	(a) GDP growth dropped from 5% in 2007 to 2.2% in 2008, and -1.8% in 2009. (b) Current account balance was -6.4% of GDP and budget deficit was -2.9% of GDP in 2009 (it was surplus 1.2% of GDP in 2008). (c) External financing (total bonds, equities, and loans) amounted to US$34b in 2008; increased from 36.5% of GDP in 2008 to 40.9% of GDP in 2009. (d) Inflation increased from 2.5% in 2007 to 4.3% in 2008 (estimated as 3.5% in 2009) (e) Reduced interest rate / National currency Won appreciated significantly before the current crisis (1$ = 929) and depreciated significantly (30%) due to global crisis (1$= 1100 in 2008 and 1317 in 2009). (f) Strong regulatory regime after 1997-98 crisis; responded to present crisis with measures such US$55b in foreign exchange reserves to provide swaps or loans to banks, trade related businesses, cutting interest rates, exchange rate devaluation, financial support for SMEs, and investing in job creation programmes. (g) Faster foreign capital outflow than 1997-98 crisis.
2. Market, per capita income, domestic savings: (a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth	(a) Small domestic market and constrained by highly leveraged households and SMEs. Korean economy depends on external demands and global financial conditions. High per capita income. (b) Strong links to Asian markets – China & Hong Kong, Japan and the US. (c) High gross domestic savings rate of growth (around 30% of GDP over the years).
3. Industrial structure: (a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market	(a) Diversified sectors, but the Services sector is dominating with 57.6% of GDP, Industry – 39.4%, and Agriculture – 3% of GDP. (b) Strong domestic firms and internationally competitive. Stock prices fell by 30% in response to global crisis. (c) Significant presence of foreign investment and fast withdrawal of foreign investment due to global crisis. (d) Strong links to foreign financial market.
4. Financial Institutions: (a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market	(a) Strong banking sector, but faced big reduction in their credit lines resulting in reduction in capital account (6% of GDP) due to global crisis. (b) Strong central bank, it cut interest rates and set up bank recapitalization fund and toxic asset fund to shield the banking sector from the global crisis. (c) Strong links to foreign financial market.
5. Foreign Trade: (a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports	(a) Exports growth declined from 14% in 2008 to -20% in 2009 due to recession. Exports included: semiconductors, wireless telecommunications equipment, motor vehicles, computers, steel, ships, and petrochemicals. (b) Main markets for exports are: Asian markets – China & Hong Kong, Japan (33% of total exports) and the US (11% of total exports). (c) No dependence on commodity exports.
6. Skills, R&D, and Technology development: (a) Investment in education and skills (human resources) development (b) Investment in R&D	(a) Investment in education and skills has been between 4 to 4.5% of GDP and 14 to 16% of Total government expenditure. New investments announced in response to recession. (b) Investment in R&D has been between 3 to 3.5% of GDP

Table 23: Some Major Components of NSI that Could have Mitigating Impact on Recession – Taiwan	
Components of NSI	*Nature/ Level of Presence in National Economy of Taiwan*
1. The general investment climate and economic policy framework: (a)Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI	(a) GDP growth dropped from 5.7% in 2007 to 0.1% in 2008 and to -1.9% in 2009. (b) Current account balance was – 6.3% of GDP in 2008 and 9.6% in 2009 and budget deficit has gone up to 1.3% of GDP in 2008 to 5.2% in 2009. (c) Total External financing including bonds, equities and loans amounted to US$24b in 2007 and US$18b in 2008. (d) Inflation increased from 1.8% in 2007 to 3.5% in 2008 and registered -1.3% in 2009. (e) Reduced interest rate / NT$ appreciated slightly against US$ (32.8 in 2007 to 31.5 in 2008) before the current crisis and depreciated due to global crisis (34 in 2009). (f) Strong regulatory regime; responded to present crisis with measures such full guarantee of all saving deposits and adoption of loose monetary policy to increase banks' liquidity, mechanisms for debt negotiations between banks and borrowers, and support for SMEs. (g) High foreign exchange reserve consistently maintained, the world's fourth largest, behind China, Japan, and Russia. FDI inflow is still significant.
2. Market, per capita income, domestic savings: (a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth	(a) Small domestic market; High per capita income (US$39 000 at PPP in 2009). (b) Strong links to Asian markets (China & Hong Kong, Japan and ASEAN), EU and the US (c) –NA--
3. Industrial structure: (a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market	(a) Diversified sectors but Services sector is growing; in 2008, their shares to GDP: Agriculture – 1.69%, Goods producing industry – 25.04%, and Services – 73.27%. (b) Strong domestic firms. Stock prices fell by 40% in second half of 2008 in response to global crisis. (c) Presence and role of foreign firms less significant. (d) Less exposure to foreign financial market.
4. Financial Institutions: (a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market	(a) Strong financial sector. (b) Strong central bank and it took many initiatives in response to current crisis. (c) The financial sector has low exposure to global financial market, but links to export markets affected the sector.
5. Foreign Trade: (a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports	(a) Exports growth declined from 10% in 2007 to 3.6% in 2008 and to -34.3% in 2009 due to current recession. Main exports included: electronics, flat panels, machinery, metals, textiles, plastics, chemical, optical, photographic, measuring, and medical instruments. (b) Main markets for exports are Asia -63% (China & Hong Kong, ASEAN, and Japan), Europe (11%), US (11%). (c) No dependence on commodity exports.
6. Skills, R&D, and Technology development: (a) Investment in education and skills (human resources) development (b) Investment in R&D	(a) Investment in education and skills has been between 5.5 to 6% of GNP and 20 to 21% of Total government expenditure. New investments announced in response to recession. (b) Investment in R&D has been between 2.5 to 2.7% of GDP

Table 24: Some Major Components of NSI that Could have Mitigating Impact on Recession – Malaysia

Components of NSI	*Nature/ Level of Presence in National Economy of Malaysia*
1. The general investment climate and economic policy framework: (a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI	(a) GDP growth dropped from 6.3% in 2007 to 4.6% in 2008 and to -4.5% in 2009. (b) Current account balance was – 15.6% of GDP in 2007 and 17.4% in 2008 and budget deficit has gone up to 3.2% of GDP in 2007 to 5.1% in 2008. (c) Total external debt declined from 27.9% of GDP in 2007 to 24.9% in 2008. (d) Inflation increased from 2.0% in 2007 to 5.4% in 2008 and estimated to be 1% in 2009. (e) Reduced interest rate / M$ appreciated slightly against US$ in 2007 and 2008 and returned to the level of 2006 by 2009. (f) Strong regulatory regime which ensured 'virtually no toxic asset ' in the financial system. Announced two economic stimulus packages totalling RM67b to help arrest the economy sliding into deep recession aimed at supporting strategic industries, developing infrastructure, and education and training programmes. (g) Increased its foreign exchange reserve to about US$90-100b by 2008. Significant role of FDI in the economy. Record FDI outflows (US$27b in 2008) due to global financial crisis.
2. Market, per capita income, domestic savings: (a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth	(a) Small domestic market; in 2007, its GDP per capita (PPP basis) was the seventh in Asia. (b) Strong links to mainly the Asian markets (China, Singapore, Japan, Thailand, and Hong Kong) and the US (c) Fell from 26% in 2000 to about 20 to 21% in 2008-09.
3. Industrial structure: (a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market	(a) Diversified sectors, contributions to GDP by different sectors in 2009 (estimate) were: agriculture - 10.1% ; industry: 42.3%; services: 47.6%. (b) Developing strong domestic firms. The Kuala Lumpur stock index fell by 30% between mid-2008 and March 2009 due to global crisis (but recovered by 25% in April-May). (c) Significant role of foreign investment/ firms. (d) Little exposure to foreign financial market.
4. Financial Institutions: (a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market	(a) Strong financial sector (after restructuring in post 1997-98 financial crisis). (b) Strong central bank and it took many initiatives in response to current crisis. (c) The financial sector has low exposure to global financial market, but links to export markets affected the sector.
5. Foreign Trade: (a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports	(a) Exports growth declined from 13.4 % in 2006 to 11.5% in 2008 and to -13.1% in 2009 due to current recession. Malaysia exported electronic equipment, petroleum and liquefied natural gas, wood and wood products, palm oil, rubber, textiles, and chemicals. (b) Its export partners included (2009 estimate): Singapore 13.9%, China 12.2%, US 10.9%, Japan 9.8%, Thailand 5.4%, and Hong Kong 5.2%. (c) Significant dependence on commodity exports.
6. Skills, R&D, and Technology development: (a) Investment in education and skills (human resources) development (b) Investment in R&D	(a) Investment in education and skills has been between 6.0 to 6.5% of GDP and 25 to 26% of Total government expenditure. New investments were announced in response to recession. (b) Investment in R&D has been between 0.6 to 0.7% of GDP

Table 25: Some Major Components of NSI that Could have Mitigating Impact on Recession – Thailand	
Components of NSI	*Nature/ Level of Presence in National Economy of Thailand*
1. The general investment climate and economic policy framework: (a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI	(a) GDP growth dropped from 4.9% in 2007 to 2.5% in 2008 and to -2.8% in 2009. (b) Current account balance was 6.1% of GDP in 2007, 0.5% in 2008 and 8.1% in 2009. Budget deficit has gone up to 2.4% of GDP in 2007 to 4.7% in 2009. (c) Total external debt remained between US$ 50b to 60b. (d) Inflation increased from 2.2% in 2007 to 8.5% in 2008 and estimated as -0.9% in 2009. (e) Reduced interest rate (7.1% in 2008 to 6.6.% in 2009)/ The national currency Baht appreciated significantly against US$ in 2007 and 2008. (f) Relatively strong regulatory regime, but the central bank is not fully independent. Announced stimulus package to sustain economic stability by targeting free education programmes, job creation, low interest loans to farmers, lower water and electricity charges and support to low income families (g) Increased its foreign exchange reserve due to banks switching their assets abroad to domestic assets during the global crisis. Significant role of FDI in the economy. The FDI fell and there was portfolio outflow.
2. Market, per capita income, domestic savings: (a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth	(a) Significant domestic market and demand; in 2008, GDP per capita (PPP basis) was US$ 8000. (b) Strong links to mainly the Asian markets (China, Japan, Hong Kong, Malaysia), Australia and the US (c) Consistent over the years at about 31 to 34%.
3. Industrial structure: (a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market	(a) Diversified sectors and the GDP share of different sector in 2009 were (estimate): agriculture: 12.3%, industry: 44%, services: 43.7% . Agriculture plays significant role in the economy. (b) Developing strong domestic firms. SET index fell by 45% as foreign investors exited and also equity market volatility rose significantly in 2008. (c) Less significant role of foreign investment/ firms. (d) Less significant exposure to foreign financial market.
4. Financial Institutions: (a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market	(a) Strong financial sector (after restructuring in post 1997-98 financial crisis). (b) Concerns about erosion of central bank's independence in determining monetary policy. But the BOT announced interest rate cuts, credit expansion guarantees for SMEs and exporters, and commitment to flexible exchange rate system. (c) The financial sector has low exposure to global financial market, but links to export markets affected the sector.
5. Foreign Trade: (a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports	(a) Exports growth declined from 17.2 % in 2007 to 5.1% in 2008 and to -13.0% in 2009 due to global recession. Thailand's exports included textiles and footwear, fishery products, rice, rubber, jewellery, automobiles, computers and electrical appliances. (b) Major export destinations and their share of its exports included (2009 estimated) : US 10.9%, China 10.6%, Japan 10.3%, Hong Kong 6.2%, Australia 5.6%, Malaysia 5% . (c) Significant dependence on agricultural and commodity exports.
6. Skills, R&D, and Technology development: (a) Investment in education and skills (human resources) development (b) Investment in R&D	(a) Investment in education and skills has been between 4 to 5% of GDP and 25 to 30% of Total government expenditure over the years. New investments were announced in response to recession. (b) Investment in R&D has been between 0.25% of GDP over the years

Table 26: Some Major Components of NSI that Could have Mitigating Impact on Recession – Bangladesh	
Components of NSI	*Nature/ Level of Presence in National Economy of Bangladesh*
1. The general investment climate and economic policy framework: (a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI	(a) GDP growth dropped slightly from 6.4% in 2007 to 5.9% in 2009. (b) Current account balance was 1.4% of GDP in 2007, which declined to 0.9% in 2008 and increased to 2.8% in 2009. Budget deficit has gone up from 3.7% in 2007 to 4.6% of GDP in 2008, and reduced to 3.0% in 2009. (c) Total external debt remained about US$ 23b in 2008-2009. (d) Inflation increased from 7.2% in 2007 to 9.9% in 2008 and reduced to 6.7% in 2009. (e) Reduced interest rate / The national currency Tk did not change much against US$ in 2007 and 2008. (f) Government announced a stimulus package of Tk.32.24b to manage the impact of the global financial crisis – to support exporters, state owned lenders and specific sectors. (g) Role of FDI stock is small – about US$7b in 2009 . FDI as % of GDP declined during 2007-08 and stood at 7%. The foreign exchange reserve was US$ 5.6b in February 2009.
2. Market, per capita income, domestic savings: (a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth	(a) Large informal sector comprising of domestic trade and commerce, and minimal exposure to international capital market. In 2009 GDP per capita (PPP basis) was US$ 1,600. (b) Strong links to Western countries market for exports and dependent on foreign aids. Also, economy depends on remittances from workers mainly in Malaysia and the Middle East. (c) The gross domestic savings has been 23-24% of GDP since 2001.
3. Industrial structure: (a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market	(a) GDP share of different sector in 2009 were (estimate): agriculture - 18.7% Industry - 28.7%, services - 52.6%. The remittances from expatriate workers play a major role in economy. In 2007-08 the remittance was US$7.9b in 2007-08 which amounted to 10% of GDP and 56.1% of exports. (b) Weak domestic firms. Small stock market. (c) Small role of foreign investment/ firms. (d) Very little or no exposure to foreign financial market.
4. Financial Institutions: (a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market	(a) Not a strong financial sector. (b) Relatively strong central bank - Bangladesh Bank (BB). It initiated a number of measures to ward off the impact of global financial crisis such as imposing lending rate cap at 13%, targeted lending programmes for listed commercial banks, and rescheduling of loan instalments receivable for major export sectors affected by global recession. (c) The financial sector has low exposure to global financial market due to “low integration with the world economy’.
5. Foreign Trade: (a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports	(a) Exports growth declined from 15.9 % in 2008 to 10.1% in 2009 due to global recession. Bangladesh’s exports in 2008 were composed of Readymade garments (RMG) – 76%, Frozen food – 4%, Jute and Jute goods – 3%, Leather and Leather goods – 2%, and others – 15%. (b) Export destinations: US 24%, Germany 15.3%, UK 10%, France 7.4%, Netherlands 5.5%, Italy 4.5%, Spain 4.2% (2008). But global recession in Western markets did not affect exports seriously due to recession resistant low end market demands. (c) Significant dependence on commodity exports 7% of Total exports.
6. Skills, R&D, and Technology development: (a) Investment in education and skills (human resources) development (b) Investment in R&D	(a) Investment in education and skills has been between 2.4 to 2.7% of GDP (2005) and 14 to 15% of Total government expenditure (2005). (b) –N/A--

Table 27: Some Major Components of NSI that Could have Mitigating Impact on Recession – Nepal	
Components of NSI	*Nature/ Level of Presence in National Economy of Nepal*
1. The general investment climate and economic policy framework: (a) Macroeconomic and social stability (b) National fiscal policy regime (c) Foreign debt (d) Inflation (e) Interest rate and (f) Regulatory regime such as trade and tax policies (g) Nature and role of FDI	(a) GDP growth dropped slightly from 4.7% in 2008 to 4% in 2009. (b) Current account balance was -0.1% of GDP in 2007, which improved to 2.6% in 2008. Budget deficit has remained around 4% of GDP in 2007 and 2008. (c) Total external debt remained about US$ 23b in 2008-2009. (d) Inflation increased from 6.4% in 2007 to 7.7% in 2008 and to 13% in 2009. (e) Reduced interest rate / The national currency Nepalese Rupee (NPR) appreciated against US$ in 2008 (NPR 65.2) and depreciated significantly 2009 (NPR 77.4) due to devaluation 12.2% during 2008-09 to stimulate export growth. (f) Introduced reforms to tax administration, Bank and Financial Institutions Act to strengthen financial sector's integrity and financial stability, and improvements to public expenditure management. But banking sector reforms are slow, enforcement of prudential regulation is weak, and the public sector accountability mechanisms are inadequate and also loose monetary conditions. (g) FDI stock – NA. The foreign exchange reserve was high (equal to 8 months imports) in 2009.
2. Market, per capita income, domestic savings: (a) Domestic market size / structure (b) Links to regional and global markets (c) Domestic savings Growth	(a) Small domestic market and minimal exposure to international capital market. In 2009 GDP per capita (PPP basis) was US$ 1200. (b) Strong links to South Asian markets – India and Bangladesh, and some Western countries market for exports – US, and Germany and also on foreign aids. Also, economy depends on remittances from workers abroad. (c) The gross domestic savings has been 9-12% of GDP since 2001.
3. Industrial structure: (a) Presence of diverse industrial structure (b) Strength of domestic firms (c) Presence and role of foreign firms (d) Links to foreign companies/ foreign financial market	(a) GDP share of different sector in 2008: agriculture sector - 32%, the non-agriculture sector was 68% , the share of manufacturing declined to 7% and the share of service sector increased from 47% to 51% . The remittances from expatriate workers play a major role in economy. (b) Weak domestic firms. (c) Small role of foreign investment/ firms. (d) No exposure to foreign financial market.
4. Financial Institutions: (a) Banking sector (b) Role and effectiveness of the Central Bank (c) Links to foreign financial market	(a) Although under developed, it is comparable to other counties in the region (Sri Lanka, and Bangladesh). The role of stock exchange in Nepal remained marginal. (b) The central bank – NRB has taken regulatory measures against risky bank activities to avoid crisis, particularly the real estate based and margin lending activities by commercial banks. As a result the stock prices have stabilised, although land prices remain high. (c) The financial sector has low exposure to global financial market due to "low integration with the world economy'.
5. Foreign Trade: (a) Nature of exports (b) Export markets (Destinations) (c) Dependence on commodity exports	(a) Exports growth increased from 1.2 % in 2007 to 11.0% in 2008. Nepal's exports in 2008 were composed of clothing, pulses, carpets, textiles, juice, pashima, jute goods. Export sector is very small compared to the total economy. (b) Export destinations: India 54.8%, US 9.7%, Bangladesh 9.2%, Germany 4.7% (2008). (c) Significant dependence on commodity exports.
6. Skills, R&D, and Technology development: (a) Investment in education and skills (human resources) development (b) Investment in R&D	(a) Investment in education and skills has been about 3 to 3.5% of GDP (2005) and 13to 15% of Total government expenditure (2005). (b) –N/A--

10. Conclusions

The research question we set out to investigate is the degree to which different countries with differing levels of National system of innovation (NSI) strength and weakness cope in mitigating some of the adverse impacts of the recession. For this we employed a conceptual framework of NSI and its potential mitigating impact on recession. On the NSI side we took six variables such as macroeconomic stability, market structure, per capita income and domestic savings, industrial structure, financial institutions, foreign trade and skills, R&D and technology development as relevant indicators of how changes in these indicators is correlated to the impact of the recession as much as these can be read through the available data. On the mitigating capability side we correlated whether the actions taken are defensive by taking measures like imposing protection, reduction in bank lending, consumer fear to spend and save and even hoard, reducing expenditure on education and R&D, reducing imports and finding new markets for reduced exports as a result of the recessionary downturn and changes in public policy. Using this conceptual framework we examined selected Asian economies – Korea, Taiwan, Malaysia, Thailand, Bangladesh and Nepal address the above research question. We employed secondary descriptive data for analysing the case countries.

The robustness of financial sector and government's stimulus package has maintained the stability of the banking sector and financial markets in the face of serious global financial crisis in Korea. However, the national currency and the equity market experienced negative impact and its exports were hit significantly due to its trade links with markets such as the US which started the global recession. Despite negative impact of recession, the government has invested significantly in maintaining the high skilled work force, creating large number of jobs, and social cohesion. The national context, that is, NSI has influenced the nature of impact of the global recession and the ability to recover from it.

Similarly, in the case of Taiwan, again it is evident that the NSI and its neighbourhood (China, Japan and ASEAN) have influenced the nature and shape of the impact of global recession and the speed of recovery. While Taiwan's strong financial sector has helped it to mitigate serious fallout from the global crisis trigged in the western countries, its predominant reliance on export driven growth had led to contraction of its growth. However, the strength of its NSI appears to have helped it to recover from the impact of global recession faster.

Malaysia's open economy, its dependence on exports, and significant trade links with Western economies, have affected its economy significantly. However, it was able to avoid falling into deeper recession due to its strengths in its banking and financial system, high national savings, large foreign exchange reserve, heavy investment in skills development, strong support to high value added manufacturing and services, measures to prevent large scale unemployment, and nurturing relatively high quality work force. Again its ability to take autonomous policy decision (e.g. even against the advice of IMF) has evidently helped its growth since the last Asian crisis in 1997-98 and also helped it to start recovery from the current global recession.

Although Thailand was affected significantly by the global recession in areas such as exports, manufacturing output, stock market, imports, and manufacturing employment, it was able to come out of recession quickly because its economy is more diversified and relatively less exposed to the ailing world economies such as the US and EU, and also due to significant contribution by its agriculture sector that provided a buffer against capital markets. It was able to implement policy measures to stimulate domestic demand. Overall, the nature and shape of impacts of the global economic recession on Thailand appears to have been largely influenced by the strengths and weaknesses of its NSI and its links to it neighbourhood.

Although Bangladesh was affected by the global recession mainly in the area of exports and remittances, the impact was not very severe because its economy is less integrated with the world economy. Also, because its predominant exports-readymade garments are low priced product for low end market which is relatively recession resistant, the important role played by agriculture sector in its economy, presence of large informal sector, and minimal exposure to international capital market. Also, its economy depends on remittances from workers who are employed mainly in Malaysia and the Middle East.

Although it was expected that global recession was likely to have some indirect impact on exports, tourism receipts, remittance flow, and aid flow, there was no serious impact. The reasons for the weak impact of global crisis on the national economy included the marginal role played by the stock exchange in Nepal, under developed financial system, the ability of the central bank - NRB to take regulatory measures against risky bank activities to avoid crisis, and the influence of it NSI neighbourhood, that is India, with its exchange rate pegged to Indian Rupee which helped maintain inflation broadly in line with that of India.

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